October, 1960/$1

ARMED FORCES management

PUBLISHED FOR THE MILITARY SERVICES OF THE FREE WORLD

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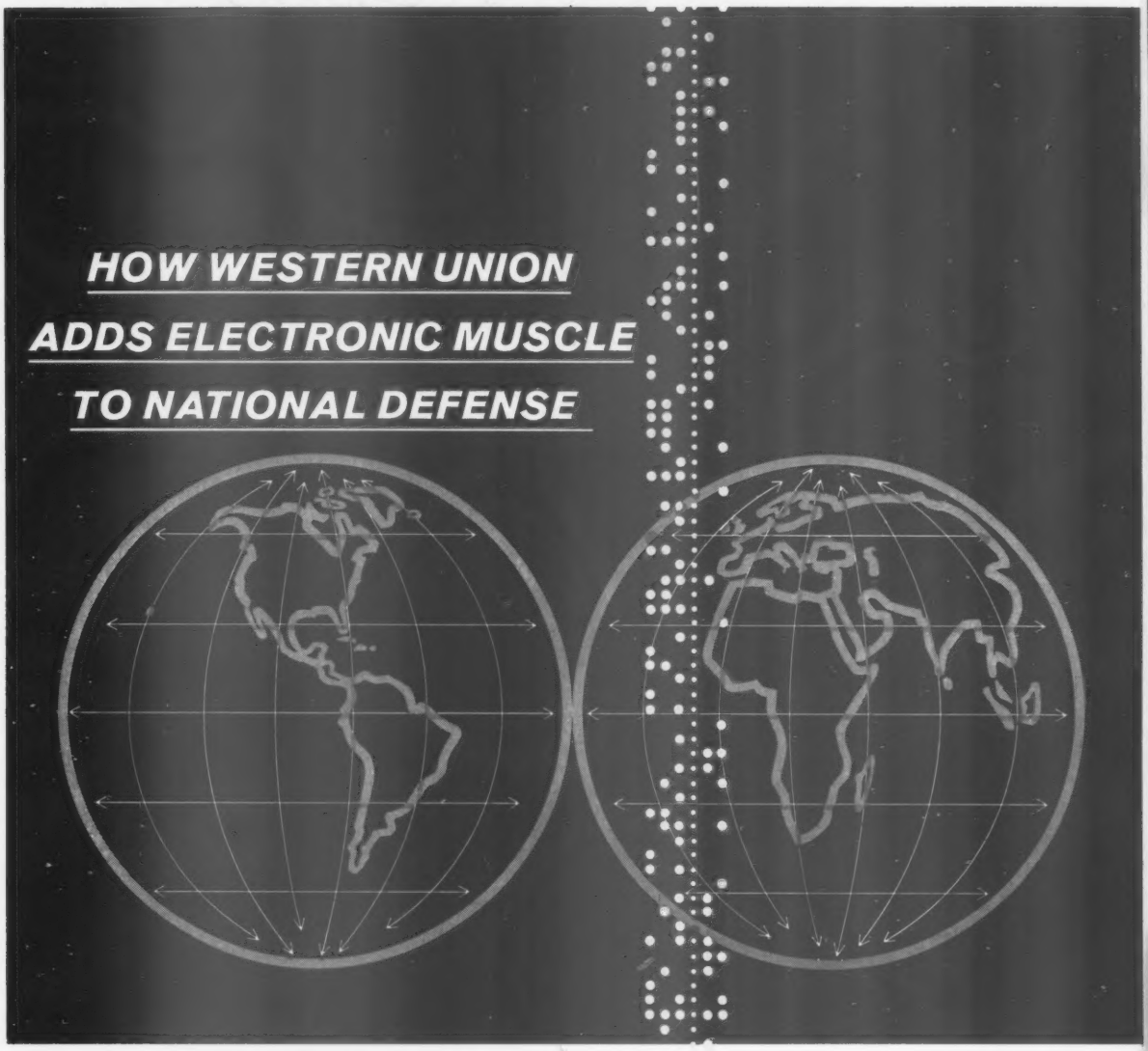
Defense Deputy Secretary Douglas . . .

"It Takes Digging" . . . 32

Is Defense Failing Its Mission? . . . 19

HOW WESTERN UNION ADDS ELECTRONIC MUSCLE TO NATIONAL DEFENSE



NEW WESTERN UNION SWITCHING CENTER AND TERMINAL EQUIPMENT LINKS OVER 350 AIR FORCE INSTALLATIONS AROUND THE WORLD!

Western Union's Plan 55 is the heart of the Air Force's Aircomnet-global Communications System. Operating out of ten major switching centers in the United States, Japan, Hawaii, England, Spain, and Germany—this 5½-million-mile automatic teleprinter system is compatible with other forms of military electronic communications. Minimum daily capacity is 130 million words, with speeds of up to 100 words per minute. Messages flash automatically and instantaneously . . . literally with the speed of light. The entire network is engineered to give urgent messages prime priority with continuous automatic checks to insure proper operation. This is but one of many ways Western Union keeps pace electronically with the ever-growing demand of National Defense. These Air Force Centers and other similar facilities operated by the military departments will become a part of the Defense Communications System (DCS) under the control and supervision of the Defense Communications Agency.

WESTERN UNION *. . . finds better ways to speed it electronically.*

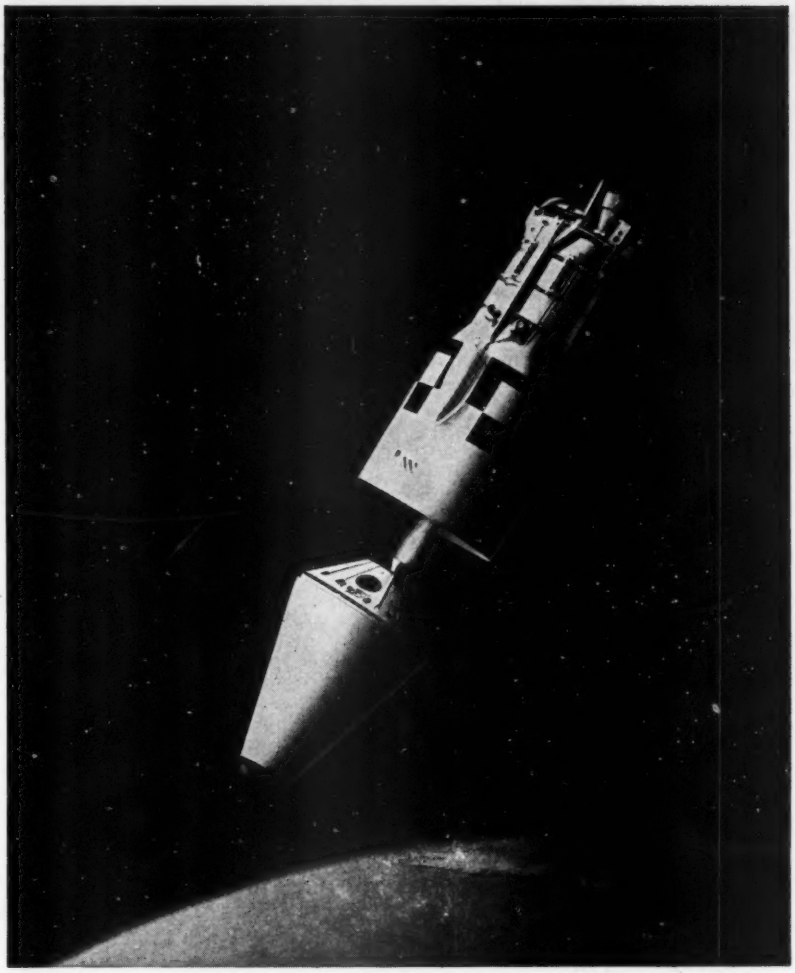
TO SPACE AND BACK!

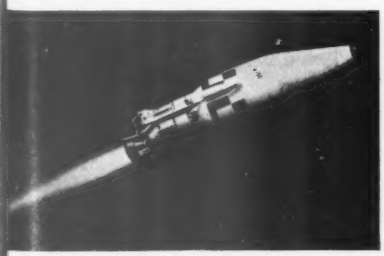
America's Agena is first orbiting satellite to send a capsule back from space

On August 11 a Lockheed-built Agena satellite gave America a monumental "first" in the race to conquer space. With perfect timing, it dropped its payload into a recovery area near Hawaii.

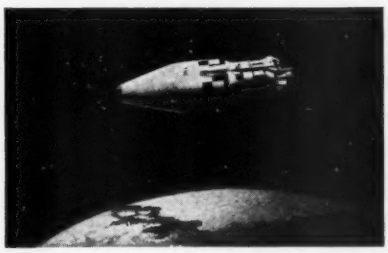
This brilliant feat, verifying the recovery technique, could not have been accomplished without the spadework already done by earlier Agenas in the Discoverer program of the U.S. Air Force. The Agena was first to be put on a predetermined orbit, a nearly circular orbit, and the difficult polar orbit; first to be commanded, monitored, and maneuvered on orbit; first to stabilize itself at an exact angle to earth; first to eject a recovery capsule. But the Discoverer program's most important achievement has been to provide the Air Force with a tested satellite for its vital Midas and Samos programs.

A larger, more powerful version, the Agena B, will be used in the satellite, lunar, and deep-space programs of the National Aeronautics and Space Administration for several years.





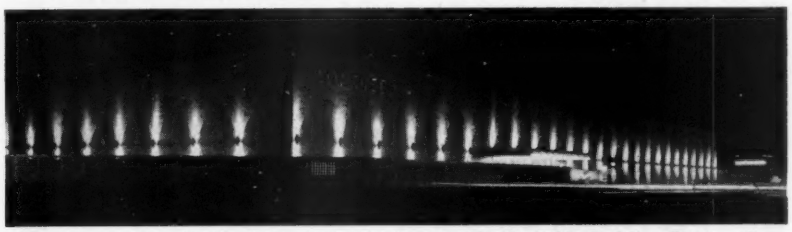
1. After first-stage Thor booster dropped away, Agena satellite's own rocket engine ignited and drove it to exact speed to reach its planned polar orbit.



2. As soon as it reached its orbit, the Agena satellite swung itself around 180°, so that it sped tail first on its 18,000-mph, 94-minute journey around the world.

3. During the Agena's 17th pass around the earth, a timing device triggered gas jets that tilted its nose downward to a 60° angle for ejection of re-entry vehicle.

4. After the vehicle's retro-rocket (see main illustration) had slowed it to a safe re-entry speed, a parachute lowered the 300-pound capsule to recovery area.



5. Agenas are made at "Satellite Center, U.S.A."—headquarters of Lockheed's Missiles & Space Division at Sunnyvale, California. Lockheed is prime contractor for the Discoverer program. Subcontractors are the General Electric Co. (recovery capsule), Bell Aircraft Corp. (Agena engine), and Douglas Aircraft Co. (Thor booster).

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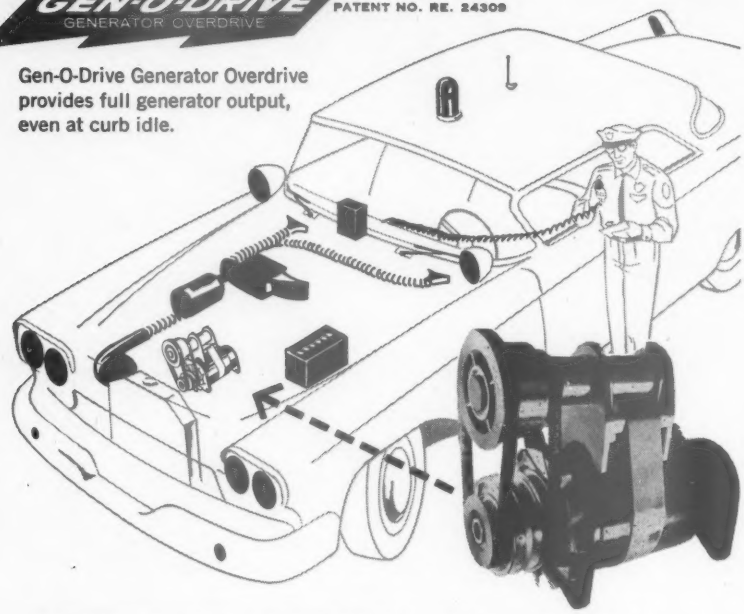

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ARMED FORCES management

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OCTOBER, 1960

Volume 7—No. 1

FEATURES

Pentagon Profile—This Month: Hon. James H. Douglas 32

Deputy Secretary of Defense—"It takes digging to discover. . ."

(Cover picture: USAF photo)

Is Defense Failing Its Mission? 19

In a cold war environment, a growing number of influential people are beginning to seriously question whether National Security (traditionally the responsibility of the Defense Department) should be vested in the military at all. These are their arguments on what is really needed to provide security for the nation.

Management Analysis: Not a Comptroller's Toy 22

Part II of a series on how good business management went a long way towards enhancing the combat readiness of the 101st Airborne Division. In this article, Gen. Westmoreland concludes the series.

How to Lick Your Paperwork Problem 28

A device with the unlikely name of "the left-handed letter," coupled with a little sound and reasonable thinking, has made some noteworthy headway in surmounting the Air Force's mountainous paperwork load.

The Eighth of Fourteen Erroneous Postulates 36

An organization is the lengthened shadow of one man.

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FEATURED NEXT MONTH

This is Department of Defense—Special Annual Report on Defense organization and operations.

There is No Defense? . . . .

ELSEWHERE in this issue is an article by a man named Howard G. Kurtz titled "Is Defense Failing Its Mission?"

It is not ARMED FORCES MANAGEMENT's usual editorial fare, i.e. concerned with improving executive control of Defense operations, but it does concern every key Defense employee. It is the nearest thing to an epitome description that we have seen of the red flag being waved by more and more thinking, concerned Americans: "Is the Defense Department giving us security in the cold war?" It seriously questions not only how well we are doing our job but, more basically, whether we should be doing the job at all or not.

Commenting on the trend during a closed door cold war symposium in Washington recently, one general officer said, in part, "Historically, the people have looked to their Armed Forces and their National Defense Establishment to provide security and protection. . . .

"Since the advent of Communism, cold war activities have threatened the security of free peoples. The answer to this particular threat has not been found in the Armed Forces of the threatened nations.

"Concurrently, the advent of nuclear weapons as a primary means of defense in war has many people questioning whether 'security' will in fact be provided by the military, if they are called upon to perform. If 'security' will henceforth involve the destruction of the people being protected, along with those of the aggressor, the cure becomes as painful as the disease.

"Thus, during the last few years we have seen the emergence of a tendency to organize within governments an activity for peace. Its mission would be to provide 'security,' *not* through armed defense, but through devices designed to *prevent* the use of military force by either side—while simultaneously providing security from cold war types of aggression.

"In my opinion, this trend is clearly worth studying by those of us in the Defense Department. The conclusions reached at the Arden House conference in Harriman, N.Y.; the recommendations of a recent National Planning Committee Report with respect to disarmament organization in government; proposals that a cabinet member for peace or disarmament be appointed, these all point to the competition we will soon face in providing security.

"If these trends should result in an executive organization for peace, and if such an organization were given both the disarmament and cold war missions, and possibly even a role in deterring war, then WHO in the government would have the principal national 'security' mission . . . DOD? or the new peace organization?"

THE AMERICAN man on the street's concern is, apparently, with the hardware Defense is developing. General Lawrence S. Kuter, Commander in Chief of the North American Air Defense Command, has related some of the details of public concern recently—as a result of a public education program conducted jointly by NORAD and Bell Telephone Company.

Surprisingly, the amateur-strategist-citizen is concerned with many of the very things which some of the Pentagon's expert planners are also fretting about. (A wrap-up on this defense strategy and hardware development headache is available in reprint form. The title: "Today's Military Strategy: Is It National Suicide?" Unlike the "organizing for cold war" problem, this military strategy roadblock must be wiped out immediately.)

THE KEY to organizing for a cold war battle was voiced recently by Dr. Raymond L. Garthoff, a U.S. Army Foreign Affairs Advisor. He said, "In the Soviet view, the main arena of conflict is a political one. We tend to differentiate between the political, economic, military and psychological factors in national power and national strategy. The Soviets consider that, while such factors as economic or military power have individual characteristics as instruments, they are all subordinate to political strategy. Military power is thus by preference used to exert political influence."

Notwithstanding who eventually handles the security mission, today we are poorly organized to combat cold war aggression—let alone conduct rewarding offensive cold war operations.

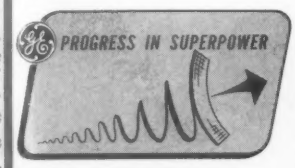
The distribution of cold war planning and operating to committees and executive departments in line with the seven functional areas of economic, political, cultural, psychological, idealogical, technological and military cold war activities will continue to guarantee a real dog's dinner of confusion, compromise and lack of coordination and direction.

(People in charge may insist that there are organizations now to provide this central coordination and direction. We submit that a report card on their effectiveness would be about as impressive as a major league pitcher's batting average.)

IN THE COLD WAR field we have some fairly good plans. But the J-5 has little in back of it. What is lacking: A J-3, a J-2, a Chief of Staff and a J-4—or cold war budget. Defense owes it to itself and to the people it's supposed to be protecting to point out: (1) that hot war armaments, particularly going their present direction, will not solve the total cold war problem; (2) that the decisions necessary to organize to fight this cold war right must be made at once.

From a U.S. interest point of view, someone must introduce some positive centralized leadership and an experienced general staff into the cold war picture—to command, coordinate and direct operations overall. Someone will have to do it today if the U.S. is to succeed, and if Defense doesn't, who can or will?

Bill Borklund



NEW

Superpower Microwave Tube Laboratory Established in General Electric Power Tube Department

WORK SCOPE INCLUDES APPLIED RESEARCH, ADVANCED DEVELOPMENT AND PRODUCT DESIGN FOR MICROWAVE TUBES PRODUCING RF ENERGY 100 TIMES GREATER THAN CONVENTIONAL TUBES

The General Electric Power Tube Department's new Superpower Microwave Tube Laboratory represents a significant step forward in the technological development of newer forms of radio-frequency energy generation. The Laboratory will continue work on multiple-beam klystrons and other tube types resulting from initial breakthroughs recently achieved by the scientists and engineers of G.E.'s Research Laboratory in the fields of linear-beam and cross-field devices. Based on these technological breakthroughs, the new Power Tube Department Laboratory has the capability of building r-f power sources in a single structure capable of developing CW power outputs in the order of thousands of kilowatts. This represents a dynamic departure in existing klystron technology which heretofore had been limited in practical applications to work with single-beam or combinations of single-beam devices.

With the advent of the new Laboratory, advances of similar magnitude are also predicted in such areas as cross-field power sources. Assumption of the Superpower Microwave Tube Laboratory by the General Electric Power Tube Department—from the Company's Research Laboratory—will facilitate the development of other functions required for marketing of products. Areas of immediate application in the development of new superpower energy sources are in the detection, location and communication with smaller and faster objects. In addition, new applications will undoubtedly include radio-astronomy, satellite space probe tracking, deep space command and communications systems. General Electric Power Tube Department, Schenectady 5, New York. 265-03-8481-31

EMINENT SCIENTISTS TO STAFF LABORATORY

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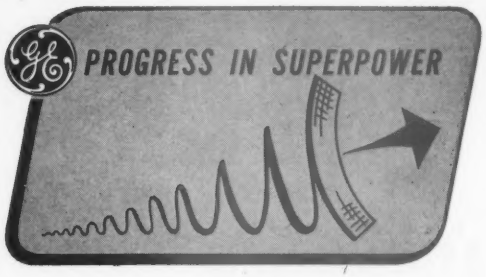

In order to focus more than 200 man-years of collective electronic experience on the further development of new radio-frequency power sources. General Electric's Power Tube Department has a nucleus of highly qualified electronic scientists and engineers drawn from the High-frequency Electronics Section of the General Electric Research Laboratory. They will operate the new Superpower Microwave Laboratory, and be supported by the continuing efforts of Research Laboratory personnel.

The average participation in electron tube activity of the personnel in the new laboratory is twenty years. Collectively, they have contributed to almost every type of electronic tube effort, with most emphasis in recent years in the linear-beam and cross-field areas, the two areas of greatest initial importance to the Superpower Microwave Tube Laboratory.

Eminent Electronic
General Electric

E. D. McARTHUR . . . Mr. McArthur has been named manager of the new Laboratory. Formerly manager of high-frequency electronics research of the G.E. Research Laboratory, he is noted as the inventor of the famous radar "lighthouse" planar triodes, first used during World War II. Mr. McArthur carried out early research and development on a wide variety of tubes, including high-power triodes, tetrodes, magnetrons, thyratrons and gas discharge tubes for a wide range of applications. He presently holds 64 patents for his work in the field of electronics.

THE SENIOR TECHNICAL STAFF . . .

DR. M. R. BOYD, project manager, traveling-wave multiple-beam klystrons

R. A. DEHN, consulting engineer

DR. P. N. HESS, project manager, cross-field amplifiers

J. S. HICKEY, project manager, resonant multiple-beam klystrons

Scientists to Staff New Superpower Microwave Tube Laboratory

LABORATORY MANAGEMENT . . .

R. J. BONDLEY . . . Mr. Bondley, an internationally known authority on the titanium hydride ceramic sealing process, which he developed and applied, will be manager of tube technology in the new General Electric Superpower Microwave Laboratory. His experience covers substantially the whole materials and methods field, including welding, brazing and vacuum technology. Much of his early work was on planar tubes and magnetrons.

Dr. D. A. WILBUR . . . Dr. Wilbur, manager of the supporting research operation, is co-discoverer of the basic principles of the voltage-tunable magnetron, and is noted for work on such developments as neutrode and unimode magnetrons. He is widely known for development of CW magnetrons for ECM, for which he received the Navy Certificate of Commendation in 1947. He is recognized as an international authority in cross-field interactions.

W. H. TEARE . . . Mr. Teare is manager of advanced engineering for the Laboratory. His background includes research and development work on nearly every type of electronic tube and vacuum device. In 1936 Mr. Teare received the General Electric Company's Coffin Award for his efforts in developing metal tubes. For the past several years he has been concerned with General Electric research in high-power klystrons.

. . . SUPPORTED BY

R. E. TURRENTINE, electronics engineer

DR. T. G. MIHRAN, G.E. Research Laboratory

DR. SE PUAN YU, G.E. Research Laboratory

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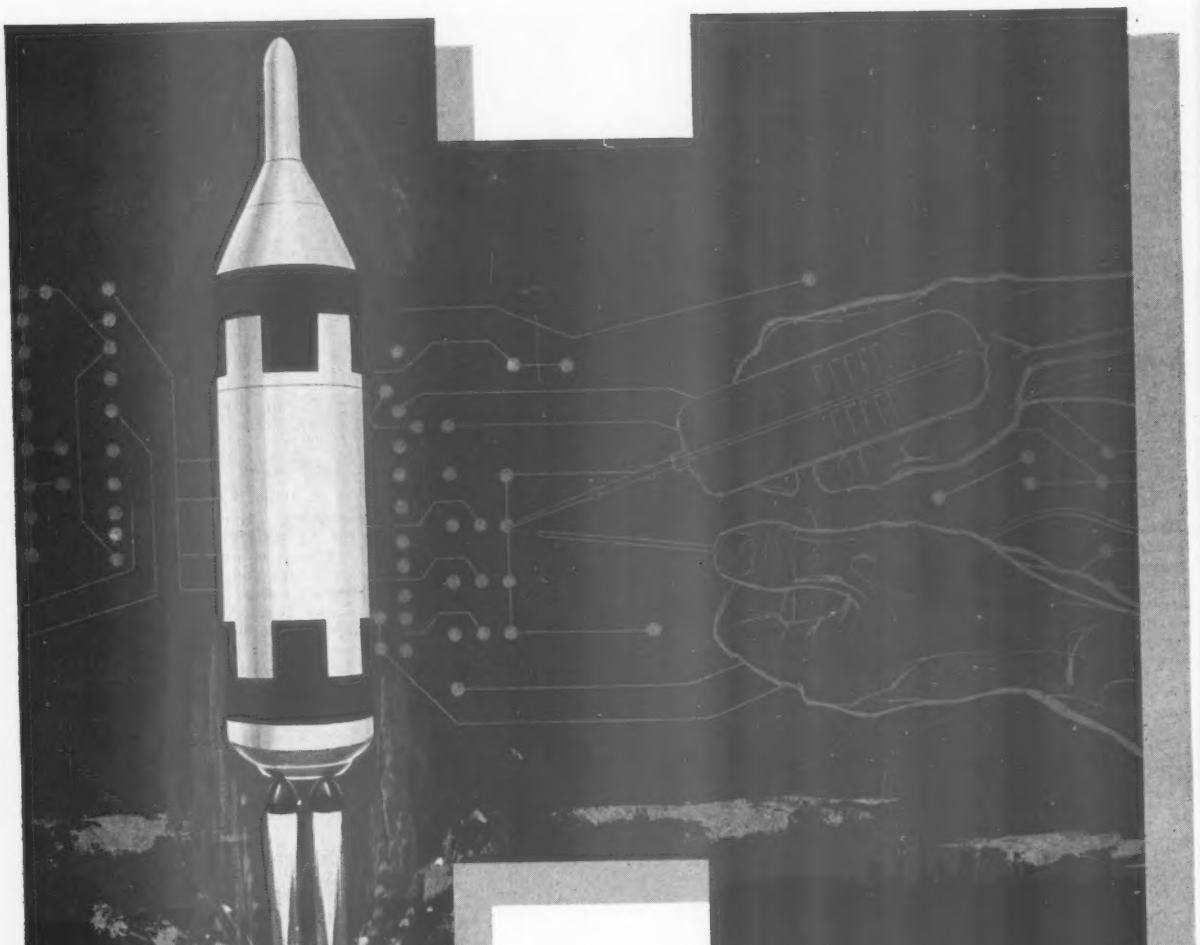
Putting Polaris on a precision



path

Newest of Hughes' many guidance developments is the advanced system for the Polaris. It is designed around a unique computer which directs the missile's course on information received from a precision inertial platform.

Now in production at Hughes, the Polaris guidance package withstood life tests of better than 1500 hours.

Yet it was not until last February that the real mettle of the Hughes-manufactured Polaris computer was demonstrated. In its first flight test, the Hughes computer worked perfectly.

But Hughes' guidance systems are not restricted to inertial types. Drawing on its experience in the development of infrared-guided Falcon missiles and radar-guided Falcons, Hughes is today working on new applications in these areas.

Three factors account for the successful Hughes record in guidance: the high degree of creative freedom given to Hughes engineers, Hughes' outstanding electronics manufacturing facilities and the intensive training which Hughes Field Engineers bring to the field problem.

Like other Hughes electronics systems and components, Polaris guidance is a product of Hughes' unique capabilities in virtually every area of advanced electronics. These include projects in space systems, airborne control systems, microwave communications, data processing and display systems, ASW systems, radar and IR detection systems—and many others.

These advancements in the state of the electronic art are based on foresight, imagination, and proven management capability. Their reliability and operational capabilities have earned them the confidence of users throughout the free world.

Videosonic Assembly Techniques, *developed by Hughes manufacturing engineers, are the most important advance in production line flow since the standard assembly track. Used to build Hughes guidance systems, these techniques regularize flow, maintain reliability, and reduce worker fatigue.*

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DATS

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Flight-line checkout by DATS (Dynamic Accuracy Test System) tells the interceptor commander whether his aircraft and weapon control systems are completely ready for a successful mission. As a result of field evaluation tests, showing the effectiveness of DATS in improving weapon control performance, RCA has been awarded an Air Force production contract. Developed by RCA's Airborne Systems Division, Defense Electronic Products, Camden, New Jersey, DATS is a new approach to the evaluation of system readiness.

It makes certain that only aircraft with properly operating weapon control systems are sent on missions. Based on a building-block design employing the highest reliability factors, a mechanical programming device and self-test capability, DATS utilizes a series of synthesized attack runs typical of mission conditions. DATS could be made applicable to many interceptor types of aircraft.

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Washington Background

Is Step-Up Due In CBR R&D?

Suddenly, on a low key, **high defense officials** keep **bringing up** the subject of "increasing appeal of **chemical, bacteriological, and radiological** weapons."

Pointing out that the **communist satellite press** had **stated** recently that **"modern war** is **inconceivable without** the use of atomic and **chemical weapons,"** Army's Lt. Gen. Arthur Trudeau observed, "additions to our arsenal of future weapons may be developed in the chemical field."

CBR appeal, compared to nuclear holocaust or **if** a **nuclear** weapons **standoff** really **develops:** "they **could be used** against an enemy **without** causing **fatalities or** any **destruction** of buildings, bridges, and other man-made structures."

Chemical **R&D budget** in FY '60 was $46.9-million, **eased up to $54-million this year.** Figures are not releaseable, of course, on what Army would like next year—but **Capitol Hill has** already **heard** expert military testimony to the effect that the **CBR R&D budget "should be tripled."**

Strategy Debate Brewing

Intramural Pentagon debate on the validity of U.S. **"minimum deterrence"** military **strategy** is growing hot, **promises to bust into the open in January** when the 87th Congress convenes—regardless of election outcome.

Preliminary reports to Pentagon front offices by staffs of strategy experts (on what the "M.D." concept with its budget-balancing overtones has done to Free World security) are reportedly **"appallingly gloomy,"** at best.

Contrary to rumors, argument, i.e. "deterrence" or "counterforce," **has few clearly drawn Service lines,** is being kept under wraps because military chiefs don't want "survival to become a political football." Debate could result, among other things, in major revamp of hardware development emphasis. **Biggest fear** of "counterforce" advocates: "Even if Congress gives us a blank check, **we may be too late."**

Short End For TAC?

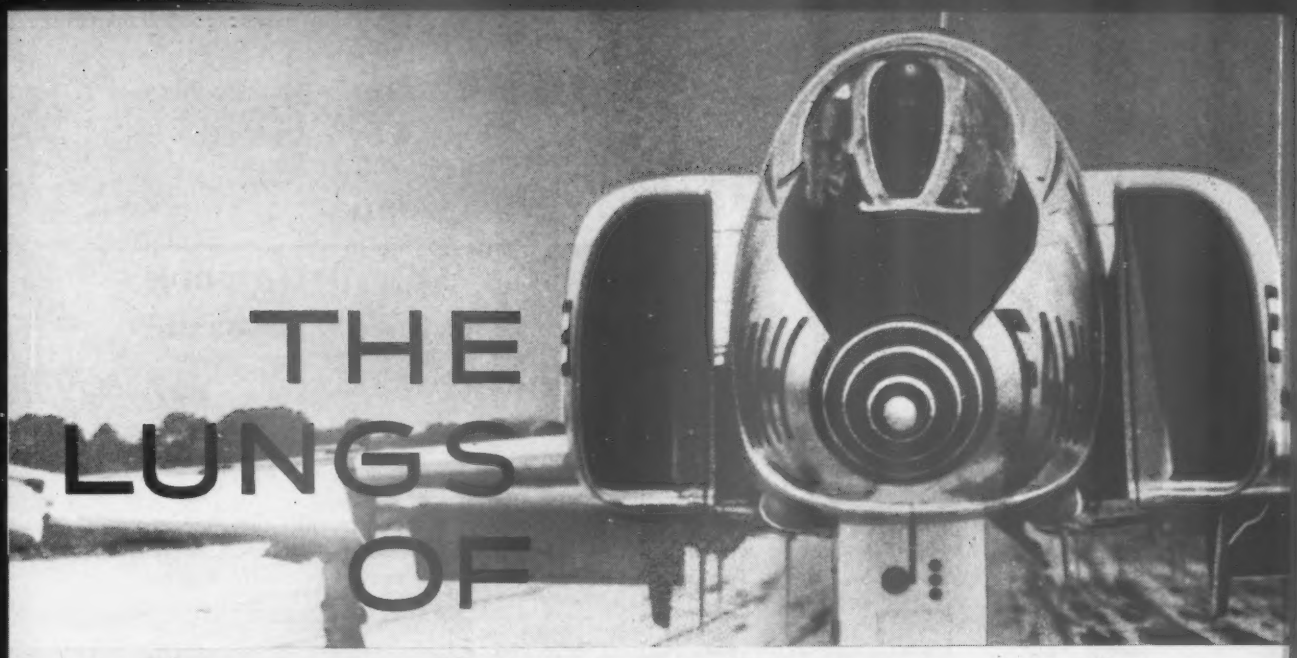
Little noted, but major point, in Army and Navy **hunt** for **"modernization" funds** to fight "limited wars," **is effect** this would have **on Air Force's Tactical Air Command.** If Congress buys modernization needs (which are critical and getting more so), add to that estimated $5 billion or so tab another $1 to 2 billion for TAC buildup. **Tactical Air Force experts insist** (1) 98 or so wings are patently inadequate to provide "small wars" air cover, (2) **force would have to be greatly expanded**—by as much as 50 wings according to one estimate.

The Pentagon And Politics

Pentagon is beginning to **feel** the hot breath of **election year 1960 politics.**

Item: Notation in this magazine last month—of **proposal,** circulating Air Staff, **to close Rome Air Materiel Area**—ran into hornet's nest of vote hunters. Decision, whether it would have been favorable or not, **has been delayed indirectly** (for probably six to eight months) **by the politicians**—who publicly labelled the item "unfounded" even though they know better.

Said one uniformed executive: They ought to change the rule to read **"All's fair** in politics and war—**except jabbing the taxpayers,** including those in Rome, N.Y."



THE LUNGS OF A PHANTOM

The twin air-induction systems of the Phantom II are unique. Their variable throats are so responsive to engine requirements they seem almost alive.

The thrust potential of the two J79-GE-8 engines is fully realized through the operation of the air-induction systems. This thrust powers the Phantom II to greater combat performance than any other service aircraft.

The air-induction systems are a triumph of internal and external aerodynamics. They are complex in concept, simple in execution, reliable in operations and remarkably efficient in all flight regimes. Each inlet system is comprised of a fixed ramp, an infinitely movable ramp creating a variable throat area and an engine by-pass. The movements of the ramp are programmed as a function of the engines' air flow requirements, the mach number and inlet air temperature—utilizing air-flow sensing devices, electrical controls and hydraulic/mechanical actuation. There is no excess flow to create drag, no insufficient flow to compromise power.

Altitude, speed and weapon-carrying capabilities have been combined in the Phantom II to a degree never before achieved in a combat aircraft. Now in production, the Phantom II offers flexible operational and armament capabilities for either police action or total war deterrence. The most versatile combat aircraft in existence, the Phantom II insures maximum defense for every defense dollar.

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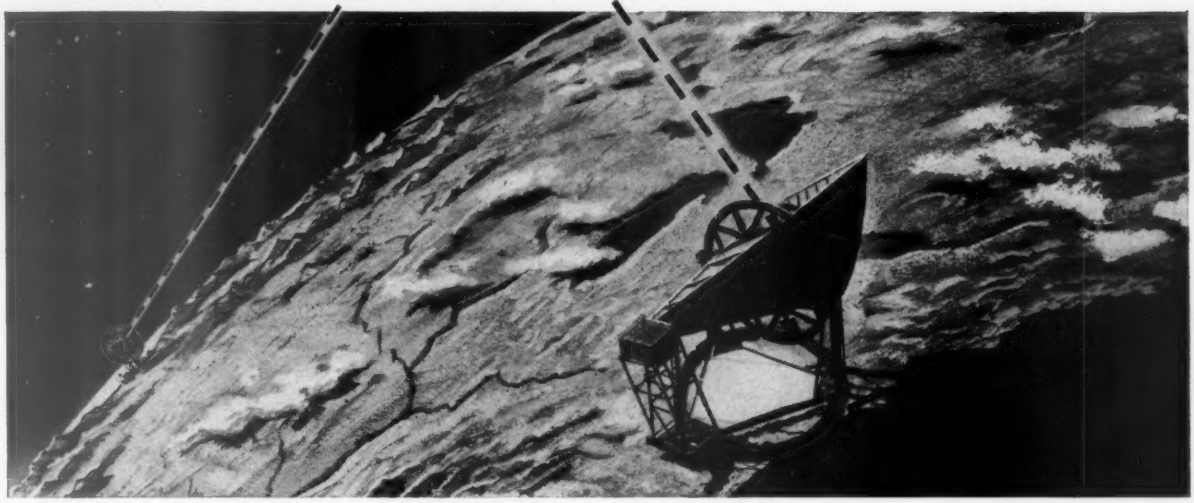
FIRST PHONE CALL VIA MAN-MADE SATELLITE!

"Project Echo" satellite went into a near-perfect circular orbit 1000 miles high, circling the earth once every two hours. Its orbital path covered all parts of the U. S.



BELL TELEPHONE LABORATORIES BOUNCES VOICE OFF SPHERE PLACED IN ORBIT A THOUSAND MILES ABOVE THE EARTH

Think of watching a royal wedding in Europe by live TV, or telephoning to Singapore or Calcutta—*by way of outer-space satellites!* A mere dream a few years ago, this idea is now a giant step closer to reality.

Bell Telephone Laboratories recently took the step by successfully bouncing a phone call between its Holmdel, N. J., test site and the Jet Propulsion Laboratory of the National Aeronautics and Space Administration (NASA) in Goldstone, California. The reflector was a 100-foot sphere of aluminized plastic orbiting the earth 1000 miles up.

Dramatic application of telephone science

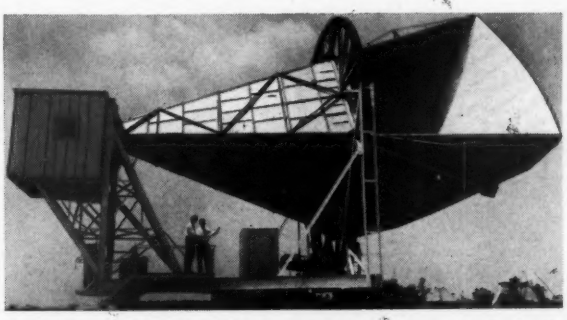
Sponsored by NASA, this dramatic experiment—known as "Project Echo"—relied heavily on telephone science for its fulfillment . . .

The Delta rocket which carried the satellite into space was steered into a precise orbit by the Bell Laboratories Command Guidance System. This is the same system which recently guided the remarkable Tiros I weather satellite into its near-perfect circular orbit.

To pick up the signals, a special horn-reflector antenna was used. Previously perfected by Bell Laboratories for microwave radio relay, it is virtually immune to common radio "noise" interference. The amplifier—also a Laboratories development—was a traveling wave "maser" with very low noise susceptibility. The signals were still further protected from noise by a special FM receiving technique invented at Bell Laboratories.

"Project Echo" foreshadows the day when numerous man-made satellites might be in orbit all around the earth, acting as 24-hour-a-day relay stations for TV programs and phone calls between all nations.

This experiment shows how the Bell Telephone System is working to advance space communication. Just as we pioneered in world-wide telephone service by radio and cable, so we are pioneering now in using outer space to improve communications on earth. It's part of our job, and we are a long way toward the goal.



Giant ultra-sensitive horn-reflector antenna which received signals bounced off the satellite. It is located at Bell Telephone Laboratories, Holmdel, New Jersey.

BELL TELEPHONE SYSTEM

U.S. AIR FORCE

Nav Aid exam 8 miles high

first assignment for the Air Force's new C-140 JetStar

America's ability to be constantly ready for strategic and tactical action throughout the free world is linked directly with the accuracy and reliability of our military navigational aids and air traffic control facilities. Now the Air Force has a high-flying electronics lab that can evaluate these aids realistically under operational jet flight conditions. Name of the plane – C-140 JetStar, made by LOCKHEED/GEORGIA.

Five of the new C-140's will go into service soon with the Airways and Air Communications Service arm of MATS. This important assignment is the first operational military role for the JetStar, which was developed by Lockheed to meet the Air Force's need for a multi-mission jet aircraft.

The JetStar operates nimbly in the high-altitude military traffic layer. With four Pratt & Whitney J-60 turbojets placed well back on the aft fuselage – behind the eardrums of the crew – the C-140 JetStar achieves Mach .8 cruising speeds. But the new C-140 is more than just quick and quiet. It's a stable platform that assures the accuracy of the sensitive electronic evaluating equipment. And the entire airplane is pressurized and air-conditioned to provide a comfortable working environment for both crew and equipment.

LOCKHEED

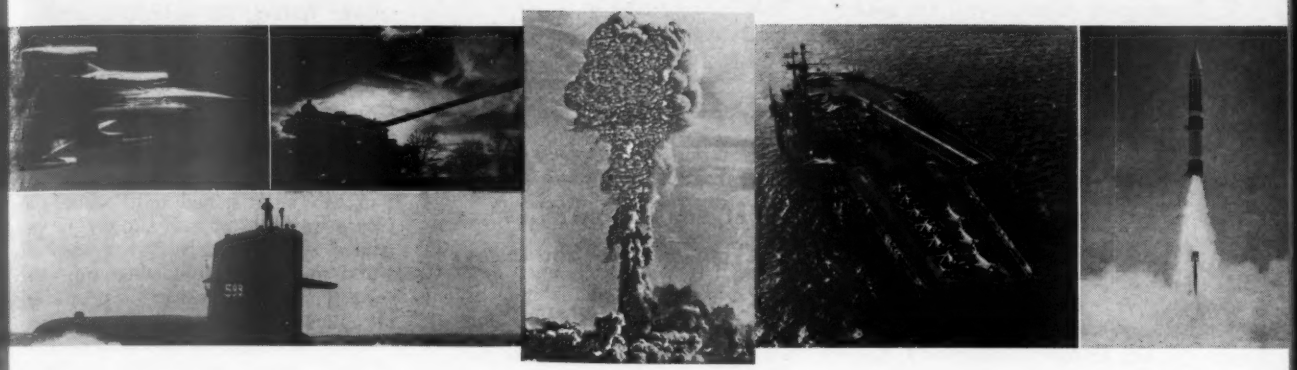
GEORGIA DIVISION • MARIETTA, GEORGIA

RIGHT NOW, VITRO IS HELPING THE NAVY change torpedoes into underwater guided missiles. ■ Today, wire guided torpedoes are key ASW weapons. Wire-guidance and bearing-rider fire control are essentials in modern underwater weaponry. Both were developed at the Silver Spring Laboratory. ■ Vitro engineers were responsible for the first wire guided torpedo system and its subsequent developments. These technical specialists are now engaged in programs to apply advanced, original concepts to underwater ordnance.

Vitro

VITRO LABORATORIES/Division of Vitro Corporation of America/SILVER SPRING, MD. • WEST ORANGE, N.J. • EGLIN AFB, FLA./OVERSEAS: GENEVA • MILAN • BOMBAY

SCIENTISTS AND ENGINEERS: JOIN THIS TEAM



Is Defense Failing its Mission?

by Howard G. Kurtz

National security is historically, the mission of the Defense establishment—the military forces of the nation. A growing number of influential people are questioning whether the mission, or control of it at least, should be vested here at all in these cold war times. To give our military readers an awareness of what the brewing storm amounts to, this article is printed—Ed.

IN APRIL 1957, in the Defense White Paper the Minister of Defense told the British people, in paragraph 12: "It must be frankly recognized that there is at present no means of providing adequate protection for the people of this country against the consequences of an attack with nuclear weapons."

Several hundred billion dollars and 13 years later, the American people, and the whole free world alliance for that matter, are no better off.

Modern generations of weapon systems have made obsolete not only the old weapons, but the old concepts of national security. By insisting on their continued use, we write the history of our own defeat.

"Three mile limit" had meaning when the cannon on a man-of-war could only shoot two and a half miles. A foreign policy that kept enemy boats three miles off-shore meant national security. It is an empty phrase today.

"Buffer zone" had meaning when a disarmed zone between two nations meant they could not kill each other. It is an impotent term in an era of intercontinental ballistic missiles. We no longer even plan for defense against the enemy strike, but retreat to the weakness of hoping only to *deter* the enemy from striking.

"Nuclear stalemate" . . . "second strike capability" . . . "massive retaliation" and other current cliches in the intellectual dialogues of disaster—all fail the future protection of the United States. The government is not in control of the national security.

The Declaration of Policy in the National Security Act of 1947 sets the goal of the Department of Defense as follows:—"In enacting this legislation, it is the intent of Congress to provide a comprehensive program for the future security of the United States . . ."

Of necessity the U.S. has invested heavily in the technology of war and annihilation. It has neglected to invest in the technology of national security. And there is a clear distinction.

We have reached the point where, even if defense budgets are doubled, or tripled, or quadrupled for unlimited military expenditures, for unlimited

In Brief:

I. **National Security in Perspective.** *The objective of national security is to provide an environment of primary physical safety for a civilization. If this security is lost, the future of a civilization is lost. The annihilation or extermination of mankind is* not *the objective of security.*

II. **An Analogy to World Security.** *Our analogy: the technical/human organization called Air Traffic Control that has brought universal safety progress to what could have been an age of air anxiety. The analogy is an approximate image that we can begin to plan toward, correcting vision as we go.*

III. **New Areas for Research.** *We need badly an organization for National Security Research. There are three major neglected research areas which are not centrally controlled and deserve large scale encouragement:*

Public Anxiety Research. *In our scholarly analyses of world crisis, we have been spending billions studying the problems of hardware, and have been neglecting study of the controlling human anxiety reactions and motivations.*

Military Safety Technology Research. *With each new scientific breakthrough, task forces of scientists and engineers are mobilized to exploit technology (a) for offensive military power, and (b) for defensive military power. Scarcely a dime is spent in massive research and development effort on the techniques of* world security discipline *which are primarily military techniques. Because military leadership has neglected them, the future security of the United States may become by default the responsibility of a* civilian *"peace agency."*

Political Science Research. *War is partly a problem of physical hardware, and partly a political problem. The political part of a world security system will be composed of organizaiton concepts, and checks and balances of power and authority, in structures not yet conceived or called for. Research in political science is far behind.*

Is Kurtz Correct?

Are author Kurtz' contentions correct? ARMED FORCES MANAGEMENT quizzed a handful of the nation's leading thinkers to get a reaction. This is what some of them had to say:

Dr. Edward Teller—*"I believe that we need something desperately, something that may be impossibe to get, something that may come close to a miracle if we get it. We need an international authority which wields moral power and which wields physical power. We need an international authority which commands the loyalty of every human being." (From an address to the Fordham college alumni association).*

Hugh C. Wolfe, *American Institute of Physics*—*"We have of necessity concerned ourselves with the short range problems of maintaining a 'balance of terror.' On both sides, we have been less than prudent in our neglect of the alternative approach to the problem, elimination of the capabilities for annihilation, i.e. real disarmament. In my estimation, our most urgent national task is to undertake a large scale R&D effort to develop and evaluate a system for what Mr. Kurtz calls a war-proof world."*

Bernard T. Feld, *American Academy of Arts and Sciences*—*"Given the required political agreements, it would be possible to create a world-wide surveillance system capable of detecting and preventing any warlike action. However, to place the question on this level raises a set of impossible political and legal requirements on which the plan is certain to founder. What is more important: given an investment of a few hundred millions, to begin with, and establishing an appropriate government agency, it would be possible to make significant progress on those technical and conceptual problems whose solutions (will certainly lead) to a more secure world and may eventually lead to a world in which major wars will be impossible."*

Jerome B. Wiesner, *director, MIT Research Lab for Electronics*—*"It is clearly important to proceed with a large scale study and development program on arms control covering all aspects including the technical ones. Until now there have been no proper studies of the complicated problems involved. We and other countries have hundreds of thousands of people working on military problems, and it is hopeless to expect to understand how to control these weapons with minor and casual studies."*

Dr. Herman Kahn, *The Rand Corp.*—*"It is a serious error to overemphasize the role of technology in the inspection and enforcement of arms control. A vigorous program of technological R&D, even if spectacularly successful, is unlikely, by itself, to lead to the design of a satisfactory system. However, there should also be a vigorous program designed to yield operational experience in the use of technology. Unless we do something like this, we would be like the man setting up a police organization for a strange culture and expecting the organization to work efficiently from the first day."*

nuclear testing, for unlimited satellite launchings, for unlimited military research and development, for unlimited stockpiling of military power, *no nation, ever again, can assure safety or security for its people against modern scientific enemy attack.*

The future security of any one nation can be regained only when the future security of all nations is regained simultaneously. What kind of world military safety device can best serve the security needs of people of all nations?

Some time ago, the inherent dangers of civil aviation forced the invention of a new kind of human/technical device called Air Traffic Control. The goal: to guarantee public safety in what might otherwise have been an age of overwhelming public anxiety.

Nation Flying Blind?

When you are flying blind in a cloud, the danger of collision is no longer something you can see, and avoid. Danger has become omnipresent and invisible and intense.

It makes no difference what church you or I go to . . . what color your skin is . . . or mine. These things no longer matter. *We both will be dead if a collision occurs.* No philosophy is involved.

So, all over the world, airmen have set up and are using Air Traffic Control, with very special limits of authority and responsibility. ATC is *not* world government. It is *not* world ownership of the airlines or airplanes. It is *not* world domination of airline labor. It does *not* have jurisdiction over your air flight origin or destination.

Each air pilot remains in sovereign control of his own airplane and passengers, and is responsible for their welfare and progress. But, on matters relating to possible collision, each pilot gives up to ATC one small increment of authority. He gives up the right to commit suicide.

There is a usable and obvious parallel to the present danger of collision between nations. (1) The people of all nations are blind to each other. And there is not time to achieve the impossible goal of "understanding."

(2) All nations must maintain their commitment to forward progress, growth, expansion for the benefit of their people. But the greater this forward speed by all nations, the greater the danger of collision.

(3) If nuclear attack, and reflex second strike retaliation should come, by design, or accident, or insanity, the impact of war will explode in the twinkling of an eye.

(4) If modern war strikes, for any reason, both sides will be dead as far

s any existing civilization is con-erned.

(5) Instinct has become invalid and unrelated to survival. Can we reach forward into the unknown, through research, and find the basis for a man-made, technical/human safety device that can keep the world physically safe and secure?

We badly need a new organization for National Security Research. Work in the research areas noted below has been done—by Defense (which recognizes its importance to carrying out its mission) and others. But it has been a dis-jointed (management-wise), ineptly programmed "bits and pieces" effort—much as the chaos of commercial aviation was controlled before the establishment of the Federal Aviation Agency.

Daring leadership once committed itself to the massive research and development assault on the problem of atomic energy. There are now three additional fleeting opportunities for large scale assault on the unknown and the "impossible."

1-Public Anxiety Research

Trapped in danger, unable to escape, unable to fight the danger ourselves, Anxiety Man emerges out of the unconscious, physiological, chemical, visceral core of human life, and takes command of public attitudes, judgements, opinions and predictable behavior tendencies — which American policy makers either ignore, or have never heard of.

In the Anxiety War which now engulfs the world, American superior knowledge of weapons technology is matched only by our total ignorance of elementary principles of public reaction in crisis.

A dictatorship like the U.S.S.R. must keep its citizens in an oven of anxiety in order to keep its control over public opinion and public behavior. No great public relations genius has been necessary in the Kremlin to keep the people of the U.S.S.R in this molten state. Nearly every act of U.S. foreign policy has tended to provide tangible evidence needed to keep the Soviet people in a high voltage of anxiety.

We have held an atomic bomb over the head of every single Soviet man, woman and child through these years. We have proceeded to build a ring of missile bases around these people, keeping them constantly on target for massive U.S. military might.

If the U.S. Government ever came forth with a long range program to bring safety and security to all these people, simultaneously there becomes available the most explosive, world-wide tide of public support from people on both sides of conflict. Public opinion, even in dictatorships on both sides of the Cold War, would force political leaders toward this goal of physical security and common defense. This is a field of psychological strategy the U.S. neglects.

One part of this problem will be to project the *military* part of the Organization Plan. From the American tradition of a military establishment committed to the physical safety of the American people, without interference in their political affairs, we are projecting here a higher vision.

Can we plan large enough for the security of the world, and the survival of all civilizations? Or is this too big for us? This is the challenge of *Military Safety Technology Research.*

The other part of this problem will be to project the *political* part of the Organization Plan. The Soviet Union could be as "communist" as it cares to be, as long as it is unable to force its system or controls on other people. The U.S. could be as distinctive and changing as it cares to be, as long as it is unable to force its system or controls on other people. This can be the most complex and difficult challenge *political science research* ever undertook.

2-Military Safety Technology Research

"Peace" has been a theme through the ages—the song of dreamers and idealists. But now, quite without intention, and actually accelerated by the pressures of war, science and technology have reached a plateau of gradual progress. Today, they can provide the technical tools and create the vast complex of scientific instruments, the communications networks, the technical devices to inspect and to prevent any nation, anywhere on earth, from ever again mobilizing for war, or threatening war.

We are speaking now of the technical capacity to create a warproof world, and not the political decision to build it.

The neglected responsibility is, however, that we have not launched any large scale, all out, research and development program to try to solve the problem.

3-Political Science Research

Someone must place such a gigantic challenge before the political scientists that they will look forward to the challenge, instead of backwards into unsuccessful history. There are no footnotes or precedents in political history for the problem of world security. What kind of political machine or gadget will it have to be?

There is a two-barrelled, overpowering demand building up for answers to this question.

I. Public anxiety has never been sustained for so long at such high voltage, over such a vast area of world population, yearning that some kind of big new idea will emerge to lead the way out of danger, instead of deeper and deeper into final extermination. This is not the moment for cliches, but the countdown to serious action, and research.

II. Science and technology have reached the plateau of progress where enforceable safety discipline could become a reality, if those responsible for national security, *in all countries,* begin to take their obligations seriously, and call forth the best that research and development have to offer.

Wrap-up

Today, we face defeat in a grim trilemma:

1. Continuation of the arms race, to handle the temporary necessity of deterrence, cannot solve the problem of the future security of the United States. It can only further erode the national security by vastly increasing the environment of danger and the risk of unwanted war.

2. Disarmament, either unilaterally, or through some negotiated disposable agreement, guarantees nothing except making the U.S. weak against some unforeseen future threat.

3. Delay, itself, the paralysis of not knowing what to do, the inability to think under stress, the fear of new ideas, the numbness that causes us to pretend the crisis will go away, all destroy the future security of the United States because each year of delay in solving the basic problem makes its eventual solution more remote.

The way to national security is not in any of these three directions, but in a break-through to a whole new kind of goal . . . the goal of security for the world. Are we of sufficient stature to commit ourselves to the three neglected fields of research and study, to the idea of coveting safety for our enemies, and for our neighbors, as we do for ourselves? If we are not capable of this level of motivation, as a nation, do we deserve to survive?

There is need for transmutation to a new species of research centers. Where the RAND Corporation and the Institute for Defense Analysis and similar quasi-governmental long-range think-groups have been focusing on the complex equations of war, there is need for new advance research groups focusing on the infinitely complex problems *of world security.* ■

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Part II

Management Analysis: *Not A Comptroller's Toy*

Final article in a series on how the 101st Airborne Division has acknowledged the need for good business management, and made it pay off in terms of readiness. This is the program set up at Fort Campbell, and the record of improvements that it wrote.

by Maj. Gen. W. C. Westmoreland

Maneuvers and management are both part of the commander's job.

WHILE IT IS always easier to work in terms of physical improvements—maintenance, repair work, item production—so-called white collar areas are equally important to a smooth running military installation.

Project Chairborne—as a part of Operation Overdrive—covered this phase at Fort Campbell with an aim to better production and efficiency in all post administration. In this area, we began work with a white collar motivation report from Union Carbide Corp. with our own ideas and peculiarities programmed in.

In the project, supervisor and subordinate analyzed each job and outlined duties required. Each supervisor then rated the subordinate's performance and in a series of conferences discussed the ratings. Better working relationships developed, and we discovered a bonus profit in disclosed training needs and weak spots in individual work.

Each supervisor got a job analysis manual, outlining the five basic steps of work improvement: (1) job analysis, (2) the manager rates performance by himself, (3) the manager gives the job analysis to the employee, (4) the manager reviews the job analysis guide with his employee, and (5) the manager counsels the employee.

Besides the manual, samples of certain job descriptions and analysis guides were prepared for all supervisors. Measured in higher efficiency, results have been substantial. Gains are considered to be:

(1) Increased supervisor and employee motivation.

(2) Better use of training facilities, on-the-job training and educational facilities.

(3) Employee strong and weak points have been stressed.

(4) There is better undersatnding of job relationships.

(5) There is better understanding of job composition by employee and supervisor.

(6) We have eliminated duplication and overlapping responsibilities.

(7) We have better job performance, resulting in heavier work loads without increasing personnel.

(8) There is increased stress on counseling.

(9) We are getting more and better suggestions.

Project Spark covered a command program to improve equipment conditions in the Division through better use of maintenance personnel and facilities.

Project Spark aimed to get a 20% increase in efficiency and overall maintenance within the Division. The two major objective areas are (1) evaluation of maintenance volume generated

in major units and separate companies, and (2) shop organization and production in all maintenance activities.

What we want is a common denominator and systematic approach to major maintenance problems.

For example, individual work measurements have been set in various activities. As a result, production capabilities are clearer and stimulus is furnished for personnel to do more work.

Simplified production and workload charts are kept by shop supervisors, as an effective management tool. Time needed to post such charts is negligible, and in some cases results have included reorganization of shop activities.

The program is simple: the layman can grasp essentials with just brief orientation. Thus, the commanding general and the Pfc. production worker can speak the same language. This has increased command emphasis and control up and down the line.

It has also created enthusiasm and increased motivation among maintenance personnel. Commanders and staff officers are familiar with and can discuss effective maintenance without resorting to Army regulations or a multitude of memos. Production is the key note.

Since the program began, many small improvements have added up to substantial gains. For instance, the direct exchange system in the 801st Maintenance Battalion was relocated and expanded for fuel, electrical, armament, and certain signal parts. This eliminated much paperwork at company and combat support platoon level, depending on the parts involved.

To date, this program has shown a 15% improvement in overall maintenance operations.

Hi-Fi Administration

Project Hi-Fi, one of the most recent subsidiary Overdrive projects, is the troop program to train clerks in job fundamentals, improve and simplify tactical unit's administration, and reduce the number of men engaged primarily in administrative work.

Specific objectives: (1) Train clerks in fundamentals of their jobs; (2) Evaluate clerk performance semi-annually to spot areas for improvement; and (3) Attain 10% reduction in the number of special duty personnel performing administrative work.

To meet these goals, we began a number of specific actions, foremost of which was to set up a school for administrative workers. The school teaches men the details of their jobs and provides instruction for supervisors and advice to commanders on improving administrative procedures.

At first, men are being trained in their specific jobs. Eventually, we will cross-train men in other subjects to add to their versatility. Also, a course of instruction for company and battery clerks is conducted with emphasis on correspondence, files, management and good office practices.

Each commander has been told about his personal responsibility for:

(1) Insuring Administration Center Chiefs and Personnel Officers are graduates of the Military Personnel Officers' Course or have prior equivalent experience.

(2) Requiring military typists have the ability to type 35 words per minute, or scheduling them to attend Post Typing School.

(3) Scheduling for the Administrative School all persons performing tasks for which instruction is offered.

(4) Running management/performance surveys to find bottlenecks, eliminate useless requirements or procedures, and insure better use of individual skills.

(5) Informing all personnel of program aims and soliciting ideas and suggestions for simpler or better administrative procedures.

Since the program began, we have seen a 420% increase in valid suggestions and 24% cut in the number of combat troops in administrative work.

Another phase of Overdrive, Project Thrift, requires commanders to institute a system that involves planning, measurement of consumption or use, and review of performance in supply areas.

For instance, in Class V supplies, to reduce unnecessary movement and expense of ammunition transportation and storage, unit S-4s and unit commanders meet monthly and forecast ammunition needs in a similar fashion to POL requirements.

While Project Thrift is too new to be reasonably evaluated, we have made substantial progress in mess operations, with a 12% drop in ration consumption for the same military population.

The Thrift goal is better economy through more realistic and efficient supply management. As we develop techniques to insure better command control over consumption and use, we will refine our goals into definitive dollar savings.

Finally, the Command Data System is a systematic program for converting statistics generated by major units into an index providing simple comprehensive pictures of unit performance.

The system allows comparison of units on equal basis, thus indicating particular areas needing emphasis within the command. Command Data applies to all major units on Post.

Major objectives are to: (1) Stress functions and activities that influence command objectives; (2) Find status of factors and programs relating to command goals and standards; (3) Highlight marginal and unsatisfactory performance; and (4) Guide command emphasis.

Standards of measurement—scoring tables—have been developed by the several general staff sections within the range of their responsibilities. All scores are based on the average present-for-duty strength of each major unit. Revisions to scoring tables and rated items are published quarterly whenever performance variation results in unsatisfactory point spreads.

Unit commanders must review and analyze monthly and quarterly consolidation of performance data and place stress on improving performance in low score areas.

Measuring Results

Each month a meeting with the staff and unit commanders is held by the commanding general to analyze and review correlated data. Where startling discrepancies appear, the unit commander is called on to discuss his problem. Also, data is compiled on performance on a quarterly basis and a command meeting is held to analyze these results.

The point is made each month by the commanding general that Command Data is a "guide for commanders' emphasis" and not the basis for competition between units. Thus unit point scores are not totalled.

Command Data System is designed as a guide only for major unit commanders. Its aim is not to be mistaken as a system to compare unit scores. Such a system, could, of course, be self-defeating.

The objective is to provide useful guidance for corrective action. It is basically another management tool for improving operations. Results cannot be measured in quantitative fashion. The program results in increased knowledge of performance, better controls at each command level, and improved across-the-board performance.

In summary, Operation Overdrive has succeeded, in conserving and better using resources, and in improving troop and civilian motivation.

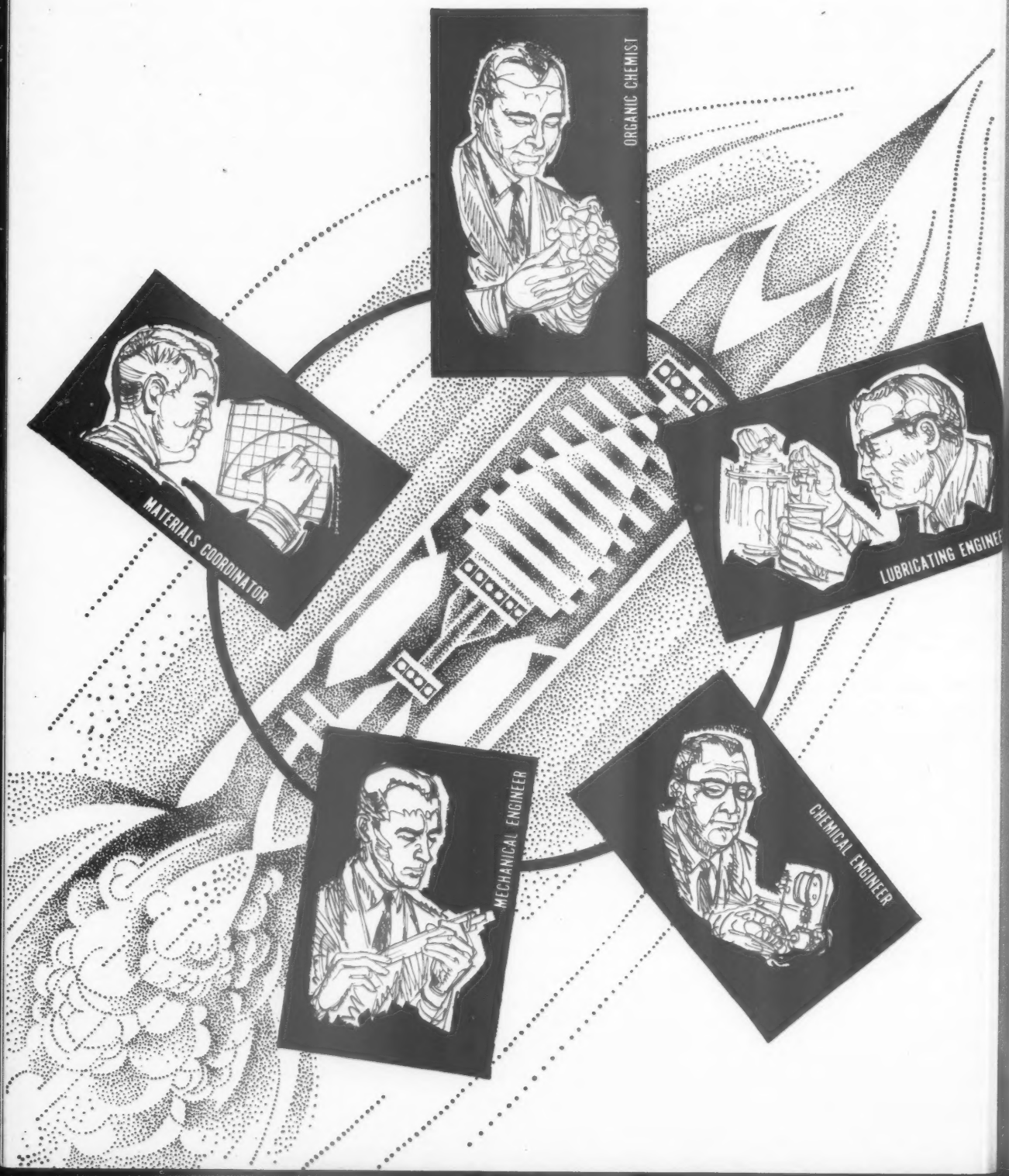
Our passwords, "Giving the taxpayer a better bargain" and "more defense for the tax dollar" have been in fact accomplished. The program continues to move forward and will become more efficient as months roll by. ■

This series condensed from an address by Gen. Westmoreland to the Army Management School.

Monsanto

Space-Age Project "HIGH-TEMP-LUBE"

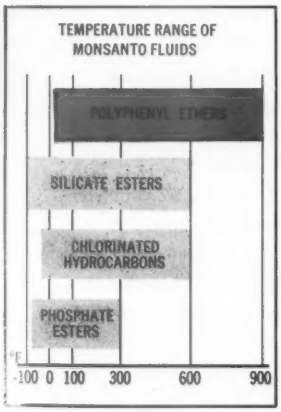
A CHEMICAL EXPEDITION . . .



.....seeking high-temperature lubricants for advanced jets and missiles...discovering new fluids that operate up to 900°F.

Monsanto has established a base of "know-how" in a new area of synthetic fluids: the polyphenyl ethers, fluids that exceed the high-temperature performance of all other known lubricants and hydraulic fluids. These newly synthesized liquids resist radiation damage, oxidation and chemical decomposition: as liquids they cover a temperature range of 20° F. to 900° F. Polyphenyl ethers are the result of creative chemistry applied to the problem of high-temperature lubricants; they were developed under contract and in cooperation with Wright Air Development Division, U. S. Air Force.

The heat stability of Monsanto's polyphenyl ethers is the result of enlisting chemical know-how on a problem of mechanical engineering. By design, lubricants for jet engines (and liquid fuel missiles) must lubricate and cool the bearings and accessory drive gears. Existing lubricants could not meet the requirements of advanced engine design. So the logical step was a Monsanto expedition into little-known fields of chemistry. A team of Monsanto scientists found and developed the polyphenyl ethers: to date, nineteen new compositions of matter.



In comparison with other synthetics, these lubricants are as thermally stable at 840° F., as are silicones and petroleum hydrocarbons at 740° F., and present commercial diesters at 540° F. Their useful temperature range exceeds all other fluids by 100° to 400° F.

Their chemical stability, physical properties, and lubricity recommend them for a host of other fluid applications: "hot" hydraulic systems; base stocks for high-temperature and/or radiation-resistant greases; and heat-transfer fluids.

Until development of the polyphenyl ethers, the calculated* useful life of the *best* synthetic lubricant was a scant 18 minutes at 900° F. Presently used synthetic lubricants would be effective for only 6 seconds to 3 minutes at this temperature. Polyphenyl ethers, however, would have useful lives of *20-80 hours* at 900° F.

*Based on the activation energy derived from isoteniscope data.

THERMAL STABILITY OF POLYPHENYL ETHERS VERSUS OTHER SYNTHETIC LUBRICANTS

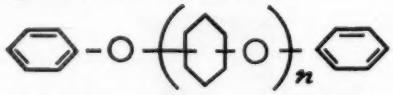
Compound	Decomposition Point, °F.	Useful Life at 900° F.*
Bis (p-phenoxyphenyl) ether	824	25 hours
m-Bis (m-phenoxyphenoxy) benzene	862	80 hours
Bis-p (m-phenoxyphenoxy) phenyl ether	832	20 hours
Quaterphenyl	826	30 hours
Silicone	740	18 minutes
n-Octacosane	662	3 minutes
Tetra (2-ethylhexyl) silicate	638	14.4 seconds
Pentaerythritol tetrahexanoate	585	7.2 seconds
Bis (2-ethylhexyl) sebacate	525	7.2 seconds

**Time to decompose 10%*

Heat stability is one important facet of these new molecules. The polyphenyl ethers also match the lubricity and viscosity indexes of other good lubricants and possess better hydrolytic stability. They are two to five times more stable than most other synthetic fluids under nuclear radiation.

THE PROPERTIES OF THE MOLECULES

The unsubstituted polyphenyl ethers have the general molecular structure:



The "*n*" values range from 1 to 8, each with linkages in various combinations of the *ortho*, *meta* and *para* positions. The various isomeric polyphenyl ethers are all good lubricants: they show heat stability within a narrow range (the 7-ring ether decomposes only 20° F. higher than the 4-ring ether; a 5-ring appears to have the optimum thermal stability).

Varying the chain length does not materially affect lubricity or heat stability—as chain length increases so does pourpoint, and, conversely, volatility decreases. A 7-ring *meta* ether boils at 1150° F., has a pourpoint of 70° F. Chemically "tailoring" and blending can provide optimum lubricant properties.

While the properties of these fluids may solve many needs, the chemical expedition which found them set out to answer the specific problem of advanced turbojet engine and accessory lubrication. Turbine bearings, surrounded by hot gases, must be kept clean, cool and smooth-spinning. (*Please turn page.*)

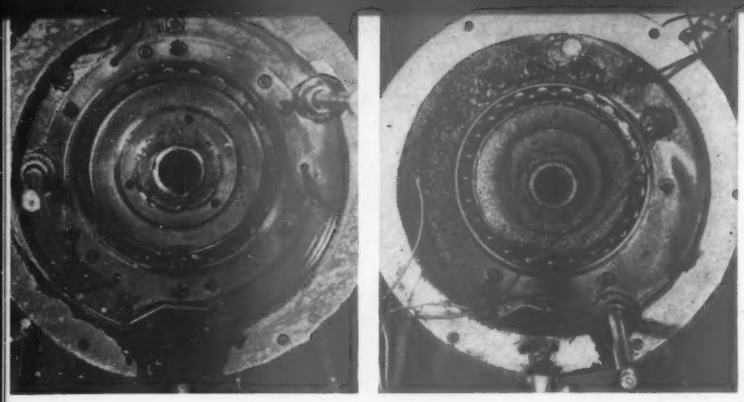
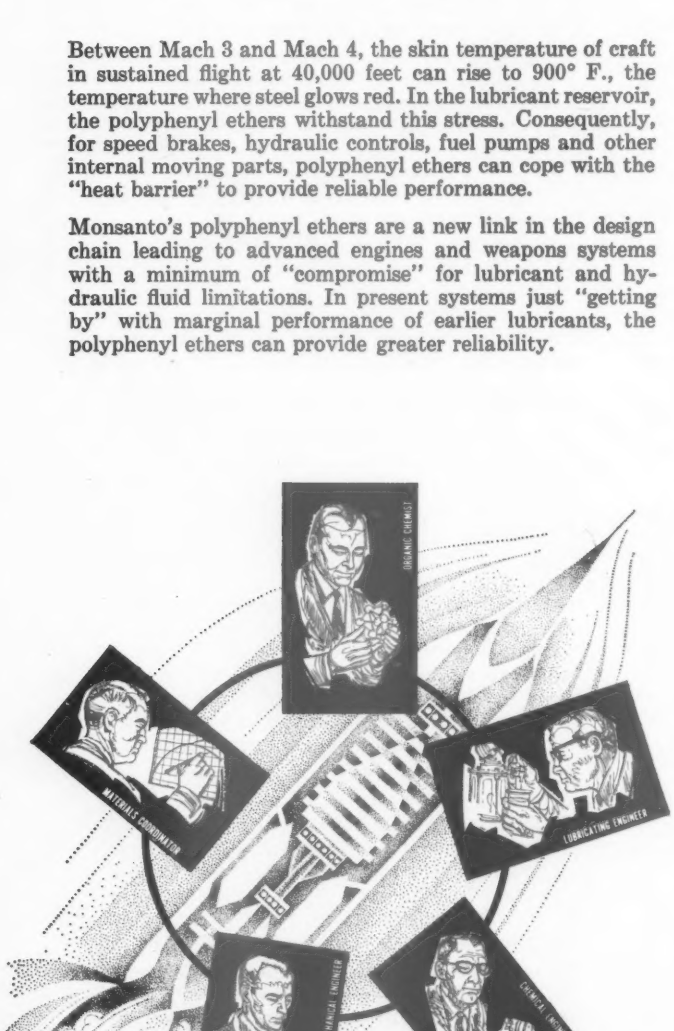


Photo Courtesy Pratt & Whitney Aircraft

Test rig parts for evaluating thermal and oxidative stability and lubrication properties of jet engine lubricants show how a polyphenyl ether (left) leaves the rig parts clean, free of deposits, and with no evidence of wear. Photo at right shows deposits and general condition of parts using one of the best synthetic lubricants prior to development of polyphenyl ethers. Both tests were run at a bearing temperature of 500° F. for 100 hours at a speed of 10,000 RPM.

Between Mach 3 and Mach 4, the skin temperature of craft in sustained flight at 40,000 feet can rise to 900° F., the temperature where steel glows red. In the lubricant reservoir, the polyphenyl ethers withstand this stress. Consequently, for speed brakes, hydraulic controls, fuel pumps and other internal moving parts, polyphenyl ethers can cope with the "heat barrier" to provide reliable performance.

Monsanto's polyphenyl ethers are a new link in the design chain leading to advanced engines and weapons systems with a minimum of "compromise" for lubricant and hydraulic fluid limitations. In present systems just "getting by" with marginal performance of earlier lubricants, the polyphenyl ethers can provide greater reliability.



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Monsanto has had 15 years' experience in the development of synthetic fluids and lubricants; currently markets over 20 fluids with applications that range from electronic coolant-dielectrics to fire-resistant hydraulic fluids for jets and radiation-resistant fluids for nuclear power plants.

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You are invited to work with Monsanto on your materials needs in the above fields.

How to Lick

Your Paperwork Problem

Air Force is doing something to clean up its written communication—which costs some $2-billion a year. After over a decade of struggle they are beginning to show solid signs of improving their paperwork operation. But the paperwork problem is never going to be licked until the commander, the man in charge, leans harder on his subordinates than he is today.

NAPOLEON may have been right a couple of centuries ago when he said an Army moves on its stomach.

But today any business, including the military, moves on paperwork. And as Air Force has found out over the past decade, trying to streamline paperwork procedure is a back-breaking, time-consuming chore. Only within the past few months have they begun to show concrete improvements.

But savings in letter writing alone have been impressive. Paperwork costs Air Force an estimated $2-billion a year. It writes and distributes about 200,000 letters and memoranda *a day*, spends over $110-million annually in direct costs on them. And indirect costs of using outmoded, unwieldly practices and formats, permitting or condoning unclear writing, easily run that tab four or five times higher.

But Air Force Director of Administrative Services, Col. J. L. Tarr, and his staff, came up with what they label unofficially the "left handed letter." (An idea partly originating with National Office Management Assn.) Just the beginning of work on overall Air Force written communications, the idea and format have already been picked up by 10 or 15 industrial firms. (Army toyed with the idea, too, but the "old timers" killed it because of "a desire to preserve our traditions." Commented one officer, "tradition in the Air Force is going to be simplicity in writing.")

Among the rewards of the left handled letter:

1. Typing time has been cut 20% with the simpler format.
2. Tongue twisting titles have been condensed to alphabet abbreviations Air Force uses all the time in speaking anyway.
3. An average 10% extra space is now available on page one, cutting the need for two page letters by one-third.
4. Air Force once had three forms—military, civilian and office memo—to teach new typists. They now have only one easy-to-learn format, have cut typist training time by 25%.
5. Air Force now makes an original and one carbon of written communications, has issued a policy that fast copy machines (of which there are several varieties) will be used for any extra copies. The result will be control over "many miles of stuff we put in files each year which shouldn't have been copied at all."

Example: Carbons of letters addressed to people requesting such things as the addresses of personnel—the address is now simply written on the inquiry letter itself and returned.

In spite of automatic data processing, there are more military people doing paperwork today than ever before. Practically every military action involves paperwork of some sort, much in the form of written communication. Air Force in the Pentagon has begun an extensive and continuing examination of its various written communication forms to see if they could be improved or used more efficiently.

They reiterate constantly that the only way to lick the problem is through emphasis from commanders, supervisors on down. This involves the whole paperwork spectrum—from writing through message handling and control to filing.

Efforts to improve correspondence practices began soon after Air Force was established, met a great deal of stubborn resistance—a reluctance to change traditional practices. But it was plain that traditional procedures and forms were far from adequate for a jet and rocket Air Force.

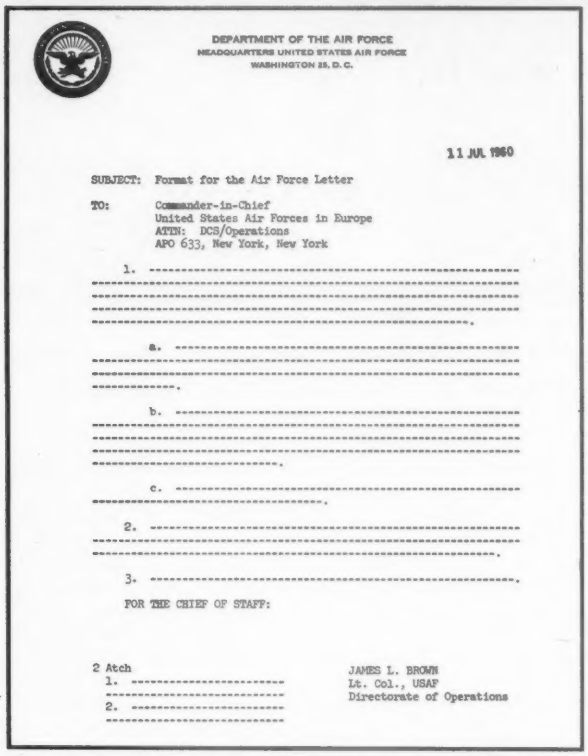
The need for rapid, economical communication grew more important each year, but progress was slow.

Among the tradition roadblocks: Too many formats to learn and use; they were too complicated, required too many typewriter settings; they did not provide information needed for a fast answer.

Typists had to learn 5 different formats: "military letters," exclusively for military addressees; "non-military letters" for civilians, private business firms, and other Government agencies; "indorsements" for forwarding and replying to military letters; a "memorandum" for interoffice use; and a "disposition form," also for interoffice use. All

In Brief:

1. *Writing talent, or lack of it, in people is one of the most stubborn roadblocks to effective written communication: verbosity, poor organization of ideas, writing to impress and not express, military jargon i.e. gobbledegook.*
2. *There is too much antiquity and not enough simplicity in letter formats. Consequently, even with overloaded message facilities, personnel send messages instead of letters even though letters will sometimes reach the destination sooner—just b e c a u s e messages are easier to write.*
3. *Often there is over-control of written documents until it takes longer to do control paperwork than to write the answer.*
4. *We often impose deadlines for answers when they are not needed. The result: one or two intermediate messages requesting extensions.*
5. *Most important, the commanders and supervisors, the men who could force the improvements, haven't yet really learned that their whole operation moves on paperwork. How rapidly, clearly and concisely they handle their paperwork operation will determine to a large extent just how rapidly, accurately and efficiently they perform t h e i r mission.*



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

11 JUL 1960

SUBJECT: Format for the Air Force Letter

TO: Commander-in-Chief
United States Air Forces in Europe
ATTN: DCS/Operations
APO 633, New York, New York

1. ----------.

a. ----------.

b. ----------.

c. ----------.

2. ----------.

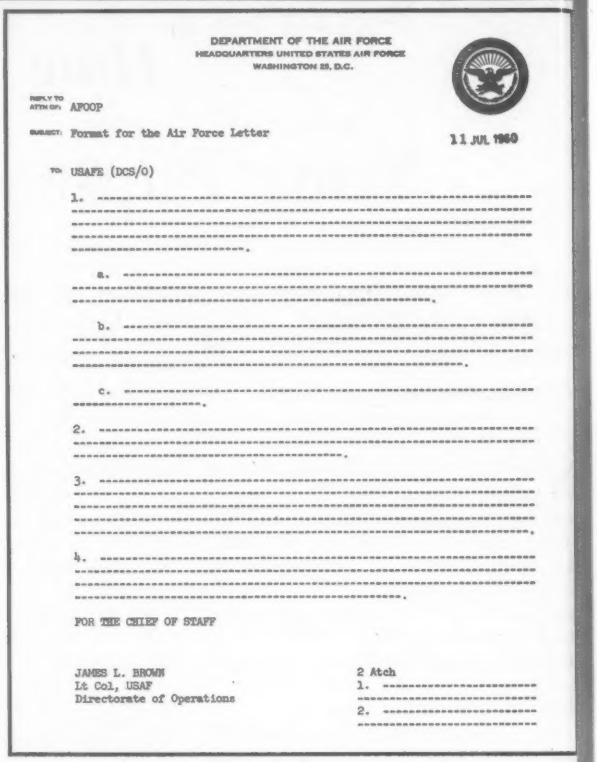
3. ----------.

FOR THE CHIEF OF STAFF:

2 Atch
1. ----------
2. ----------

JAMES L. BROWN
Lt. Col., USAF
Directorate of Operations

This is where the Air Force had to begin in overhauling its format for letters—a conglomerate of pieces making up a less-than-satisfactory whole.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D.C.

REPLY TO ATTN OF: AFOOP

SUBJECT: Format for the Air Force Letter

11 JUL 1960

TO: USAFE (DCS/O)

1. ----------.

a. ----------.

b. ----------.

c. ----------.

2. ----------.

3. ----------.

4. ----------.

FOR THE CHIEF OF STAFF

JAMES L. BROWN
Lt Col, USAF
Directorate of Operations

2 Atch
1. ----------
2. ----------

The new form—drastically reduced mailing address, routing instructions for a reply and other factors go into making up a much more readable, useable piece of correspondence.

five provided essentially the same kind and amount of information.

The answer: A single basic format providing the same information. It was simple and easy to complete, had all the letterhead information a reader would need. (See illustration)

Among the improvements: The formal address in old formats required three, and sometimes four, lines. Over 90% of Air Force correspondence is between Air Force activities. Most Air Force communications addressed to the same place are consolidated for mailing under one cover in a central mail room.

The Realistic Approach

Therefore, it was possible to adopt a short form of address for Air Force activities. Thus:

Commander-in-Chief
Strategic Air Command
Attention: Director of Plans
Offutt Air Force Base, Nebraska

Becomes:

SAC (DPL)

The initials in parentheses represent the office that will act on the communication. (Even on the envelope, the full designation needed boils down to SAC (DPL), Offutt AFB, Neb.)

Another saving: Eliminating salutation and complimentary close in letters to persons or organizations outside Defense Department. Air Force is probably the first Government agency to adopt this modern business practice.

These phrases are used only in letters to individuals on matters of personal concern. "Dear Sir" and "Yours truly" are meaningless, excess words when writing to a manufacturer about jet engines; but "Dear Mrs. Smith" and "Sincerely" carry meaning in a letter to a mother about her son.

Accepting the streamlined format by the Air Force was only the prelude to attacking the next obstacle to better written communication—the procedures for moving communications from writer to reader.

The traditional need for transmitting letters indiscriminately through the chain of organization in a headquarters, regardless of level, has been short circuited.

Letters in military organizations are customarily signed at relatively high echelons. Replies were normally addressed to the installation commander or signer without identifying the office that actually handled the matter. A mail center had to read letters to spot the intended recipient.

Routing was often to the next lower echelon, whether the communication was to be handled there or not. A complicated routing structure grew up. Mail control, suspense control records, and accountability records for classified mail were created. And at each stop, this entire procedure was repeated. Delays caused by this system sometimes meant days of inaction.

Reply to the Right Place

Provisions for using the "Reply to Attn of" caption, including identification of the action office, gave the recipient an address if he had to reply. After repeating this process, and getting used to associating office designations with the addressees to whom he regularly corresponds, he now uses these designations in letters he originates.

Thus Air Force established new procedures, almost entirely eliminating intervening readers and control records. All of this helped speed up action.

Last obstacle was the military letter indorsement. The indorsement, used only to append a reply or a forwarding comment to a communication, encouraged fat, sluggish paperwork. It was used mainly to inform all offices be-

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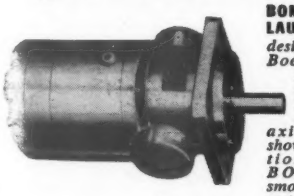
HANDLING



BOMARC HYDRAULIC LAUNCHER/ERECTOR *designed and built by Boeing Airplane Co., Seattle, Washington —is powered by Denison 500 Series constant volume axial piston pump, shown in inset. Elevation of the 7½-ton BOMARC is fast, smooth, fine-line accurate with Denison hydraulic power.*

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New Technical Bulletin 204 gives details on Denison "Advanced Hydraulic Components For Ground Support Equipment". Write for your copy.

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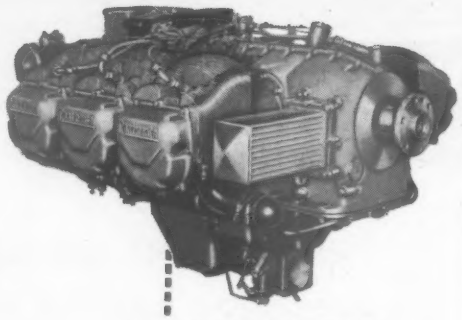
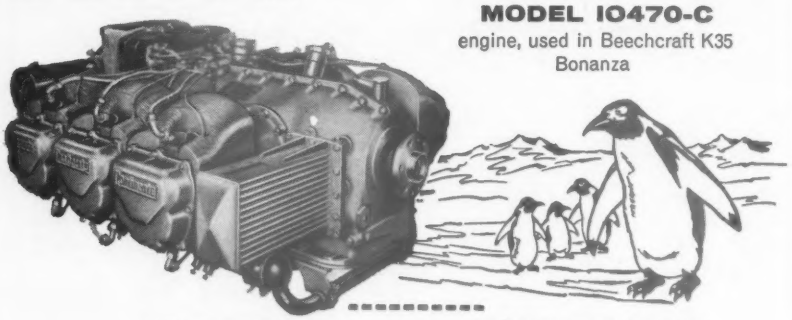


MODEL IO470-C
engine, used in Beechcraft K35 Bonanza



MODEL IO470-D
engine, used in Cessna 310-C twin engine executive aircraft

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tween the communication writer and the action office what action had been taken—or merely to show which office had seen the communication.

Even a reply to a simple inquiry meant returning the original letter to its writer. Each office through which a letter was channeled kept copies of the letter and all indorsements.

Plainly, this encouraged buildup of files, duplication of records, and making extra copies if none were available —all costly practices. Complicated assembling and reassembling procedures were also built into the indorsement process.

Short Note Reply

Some communications must go through the older channels to obtain coordination of action. The indorsement is still used here. But where a job can be done by two offices, direct communication using a separate letter reply is encouraged.

Air Force now uses the accepted business practice of replying to a letter by a separate letter in a large part of its correspondence, has adopted the general rule that only an original and one file copy of letters be made. The separate letter reply, in lieu of indorsement, has meant less bulky files, less records duplication, and fewer copies of letters.

While indiscriminate use of the indorsement was found wasteful, there was an aspect of its use which was both efficient and economical. For example, some offices faced large backlogs of routine inquiries and similar mail because of a shortage of clerical personnel. The reason: this mail had been answered by formal letter.

Air Force decided instead to use a "short note reply" for speedier service and economy. Handwritten on the original letter (then returned to the sender), it is most effective when a copy of the original letter is not required.

Gobbledegook Gone

When a copy is required, it can be made by an office fast-copy machine after the short note reply has been added. Savings: about $2.00: the cost to prepare each formal letter.

But streamlined format and efficient processing would not alone produce effective communication. Letters themselves must be well-written and understandable. Military letter style had, to date, been, by tradition, excessively formal. Phraseology was stilted and unnatural, it was a difficult tool for communicating—from a writing and read-

(continued on page 35)

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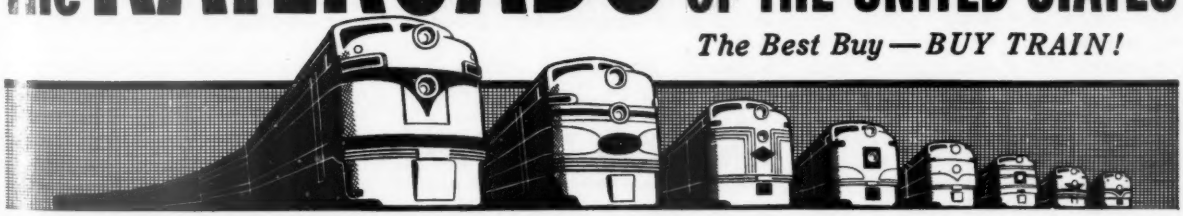

Deputy Defense Secretary James H. Douglas

"It Takes Digging To Discover..."

FOR James Henderson Douglas, switching from Secretary of the Air Force to Deputy Secretary of Defense was a more difficult transition job than just walking downstairs to the mammoth E-ring executive suite on the Pentagon's third floor.

But the change (last December - at the same time Thomas Gates moved up from Deputy to Secretary of Defense) was considerably easier on Pentagon efficiency than such a "new faces" injection has ever been before.

The Gates-Douglas experience in Pentagon operations (a total of 14 years) has produced and is producing some significant results. (Whether this trend to put knowledgeable men in the top posts will hold up under election year heat is another question.)

One reason: The ordinarily pressing need to educate a new man to the problems, progress and routines that have gone before was, for these men, less critical. They already knew most of it.

Appointing a replacement for one of the handful of high-level civilian positions in Defense almost invariably stirs apprehension among career Pentagon veterans. Operations and the decision making process often tend to sag while the boss is learning, sometimes stay "sagged" during a new man's entire tenure. The 14-man hierarchy in OSD alone averages a complete turnover every two years. Some appointees hang on for less than 12 months.

The result of looking at Defense problems from both the service and "non-partisan" OSD viewpoints, Douglas' background lends a unique, compelling force to his opinions.

(Douglas has followed in the footsteps of the late Donald Quarles in climbing the Defense job responsibility ladder. Appointed Talbott's Under-secretary of the Air Force in 1953, he became Air Force Secretary early in 1957, when Quarles, then Air Force Secretary, was picked to be Deputy Secretary of Defense, moved into his present job when Gates was promoted.)

Recently, ARMED FORCES MANAGEMENT requested an efficiency report on the highly critical, but relatively unglamorous, business of running the Pentagon front office. Among Douglas' pertinent answers:

Q. *Critics of Pentagon procedure, have seriously questioned whether top civilian leaders are ever given enough comprehensive information on which to make decisions. Are the critics correct?*

A. There is a military tendency to firm up positions before they come in here. This makes it very hard for us to discover where the dissenters were or what they had to say. It sometimes takes digging to discover alternatives. I have tried to let it be known that I just don't want a briefing which tells me only one answer, without reference to other views.

Q. *When should you be informed of problems?*

A. With the major problems, we cannot, I believe, get into them too soon. Even if it's only a preliminary unofficial opinion, we can provide guidance to the military departments which should be of considerable help to them in reaching solutions.

Q. *What advantages are there to long experience in Pentagon operations?*

A. Both the Secretary and I, having been around here for seven years, have a real advantage in carrying on discussions. Every once in a while it occurs to me, while being briefed on some problem, that I have heard all these arguments before—even helped devise some of them. This time-in-service also helps in knowing who to contact to get what you know are authoritative answers to questions—an advantage a new man doesn't have.

Q. *Briefly, what does a Service Secretary do?*

A. My primary responsibilities involved Air Force programs and budget, and their presentation to the Congress, personnel, procurement policies, and base construction. You aren't particularly worried about where your strategic capability fits with another service. The important thing is how to build your own capability and keep it strong enough (in the Air Force's case, for instance) to perform the mission you are assigned.

Q. *How does that compare with a key position at the OSD level?*

A. We (Gates and Douglas) must still be informed on service problems but we are immediately involved with State, White House, nuclear testing, disarmament, Air Defense with the Canadians, NATO, the Military Assistance Program, and a host of overall relationships. And most important, we work closely with the Joint Chiefs.

We try to help stimulate a realistic look at service problems by the services themselves, singly or together.

(Example: The missile site construction lag and what defense has done about it. A lot of the usual organization has been, is being streamlined in this area—with top level OSD encouragement. We should now avoid further construction delays and some credit must go to this particular aspect of the solution.)

Q. *With the success of Polaris, the (Air Force) proposal for a unified Strategic Command has been made. What do you think of the idea?*

A. This problem has been settled by the Secretary. No new command, but new machinery to assure an integrated plan. This is a fine accomplishment.

Q. *What is your feeling today about the setup created in the last major Defense Reorganization—in 1958?*

A. Both Secretary Gates and I feel that the Reorganization of 1958 provides good tools with which to operate. We still have service-oriented problems and ambitions but we are going to have these anyway no matter what the organization.

Q. *Is the Joint Chiefs system reasonably satisfactory?*

A. Yes, I think the Joint Chiefs system is workable and has become increasingly effective. An important thing to recognize is that the Chiefs of Staff have basically different views on many military matters and unanimous decisions cannot be expected all the time. For the system to work well the Secretary of Defense must consider the different views and recommendations presented and make prompt decisions.

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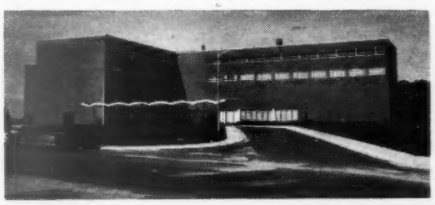
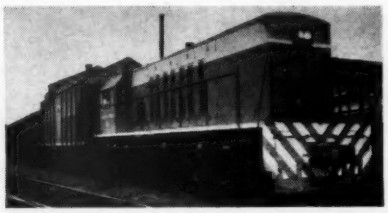
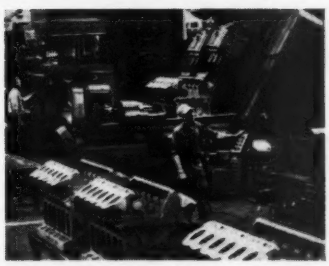
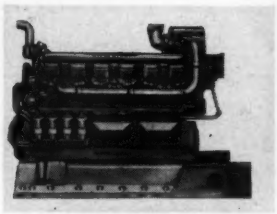
Because Caterpillar has constantly strived to improve its products, a good many "firsts" in diesel engine development have benefited every kind of engine user. In addition to being the first to turbocharge and aftercool a diesel for the









engine power
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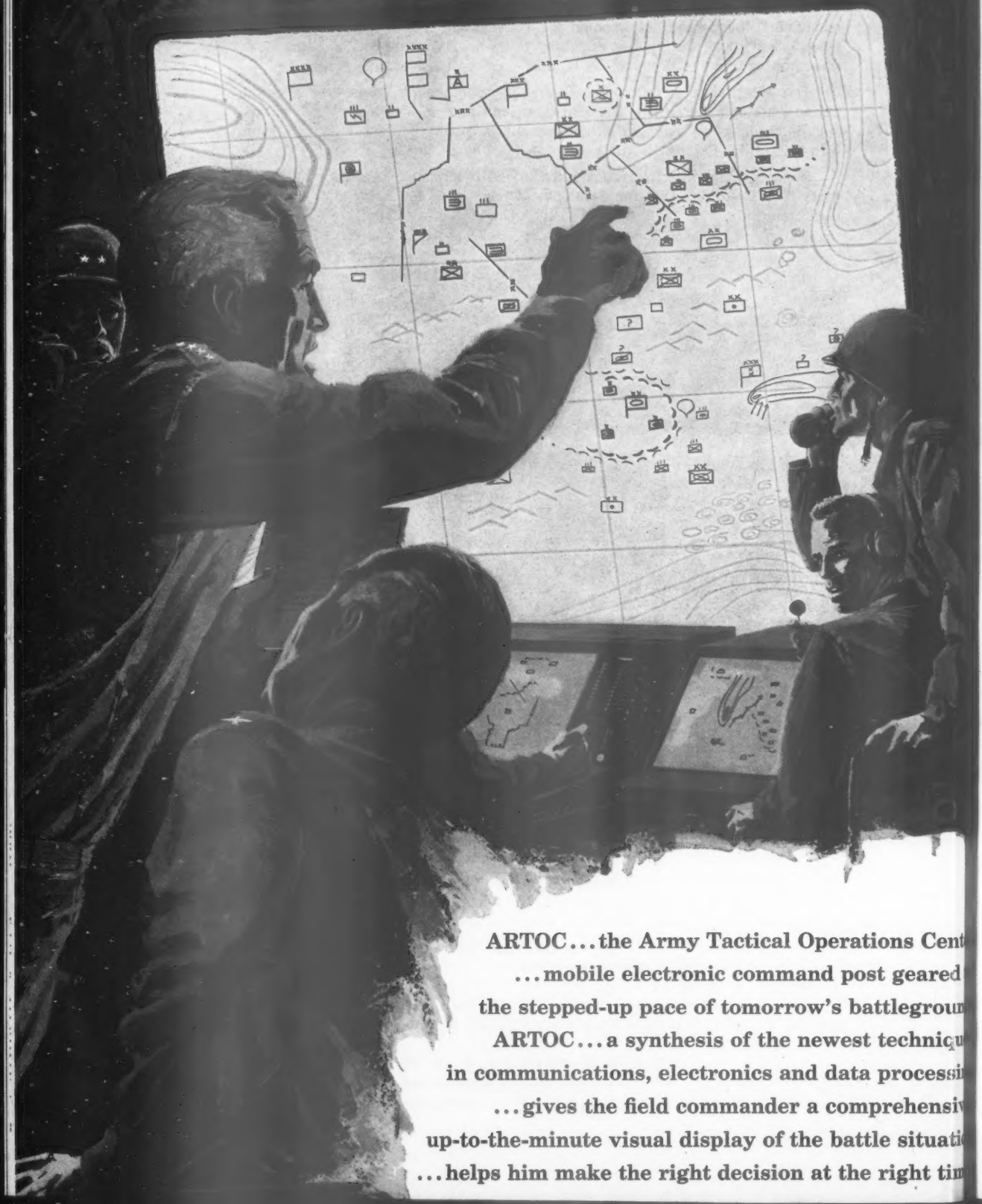

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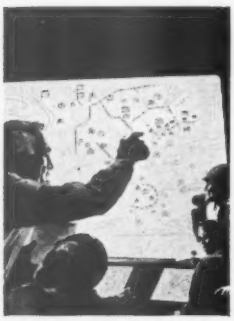
...helps him make the right decision at the right tim



ARTOC... is being developed by Aeronutronic Division of Ford Motor Company for the U. S. Army Signal Corps. It is one of many Aeronutronic programs aimed at simplifying military and industrial problems through the use of an advanced computer and data processing technology. These programs—and many others related to advanced weapon and space systems—are underway at Aeronutronic's Engineering and Research Center in Newport Beach, California. They demonstrate Ford Motor Company's rapidly-growing capability in meeting the needs of science and defense in the changing world.

A booklet describing Aeronutronic's accomplishments and capabilities is available to you on request.

AERONUTRONIC

AERONUTRONIC DIVISION Ford Motor Company, DEFENSE PRODUCTS GROUP

Ford Road, Newport Beach, California

WEAPON AND SPACE SYSTEMS • COMPUTERS AND DATA PROCESSING SYSTEMS
MISSILE RANGE SYSTEMS AND INSTRUMENTATION • ADVANCED ELECTRONICS
Career opportunities are open for engineers and scientists

Paperwork . . .

(from page 30)

ing point of view.

Writers chose an electrically transmitted message over a letter because it was less formal, ignored the rules of punctuation and the niceties of grammar. Also, a message was not bound by the formal and stilted language imposed by military tradition. (This was a major factor in overtaxing electrical communication facilities.)

Air Force found that by avoiding this extremely formal style and encourging personnel to write more naturally, they readily choose a letter to communicate. This eased the burden on the Air Force electrical communication network and made more time available for more important traffic.

Air Force started this phase of its written communication program by encouraging all commanders to require personnel to take the Plain Letters Course offered by the General Services Administration.

Four-Point Attack

After taking the course and with a little practice, Air Force personnel are learning how easy it is to write a clear, concise, and effective letter—and do it faster. At the receiving end, it is easier to read and comprehend—again saving time. There will also be fewer mistakes in comprehension and minimum of follow-up correspondence asking for more information or clarification.

Says Tarr, "A good start has been made in writing improvement. But this is an area where progress is necessarily slow and results are not readily apparent. The emphasis on effective writing will continue.

"Our studies show that most paperwork processes consist of many related details that are individually insignificant. Collectively, they either constitute an efficient and economical method or a latent handicap to the effective use of the time, people, or money directly or indirectly involved.

"The painstaking analysis and evaluation of these little details, individually and collectively, can rarely be replaced by a gimmick.

"The Air Force," he adds, "will continue to use the more painstaking approach to close the gap between writer and reader, reduce our paperwork overhead and convert our paperwork processes from necessary evils to necessary and effective tools in doing our job.

"In other words, the Air Force's entire effort can be summarized in four words: (1) Simplify, (2) Standardize, (3) Automate and (4) Emphasize." ■

The Eighth of Fourteen Erroneous Postulates

8—An organization is the lengthened shadow of one man.

by Leland B. Kuhre,
Col. USA (ret.)
Founder and Director
The Academy of Organizational Science

The "lengthened shadow" generalization and variations pervade literature, speech, and practice of organization and management in all fields: business, government, military, human service.

"There are no bad companies, only bad company commanders," or company presidents. Management-school classes "fire the president" or "get a new commander" as pat solutions for case problems. "Become a model personality, then form your organization in your image" is still the central idea in manuals on leadership. From Plato comes "one man writ large."

Age, repetition, and prestige-utterance implant generalizations in mind with postulate-weight as starting assumptions from which to form and operate (manage) collective-human-effort-for-a-purpose.

In Plato's time, the prevailing organization was the centuries-old family of master and slaves; men formed it by analogy with the only natural dynamical organization known to them up to that time: the force-of-will-moved human organism. The organization was, inherently, "one man writ large."

From Aristotle On

Starting with Aristotle, then-assumed laws of nature and human-organism-analogy built an image of the organization of man's world (stationary earth, moving planets, fixed stars) in the common mind. The whole world was one organism; it was actuated by one head's force of will.

A "Godhead" or "immovable mover" in the region of the fixed stars delegated his authority to a hierarchy of spirits or gods in the seven heavens; they used the head's force of will to move the seven planets around the earth and to control events on the earth at the foot of the organization.

This organism-image, then common-sense-valid by authority of religion, laws of nature, and human-organism-analogy, was the second analogical model—one for much larger organism-organizations of persons. Kings wrote themselves large through a hierarchy of personal delegates (nobility) who extended the king's will to the earthy foot (peasants) of the organization—the kingdom.

This second analogical model for "lengthened shadow" organizations was in common use for over a thousand years; it collapsed in the 18th century under weight of Newtonian reason. The world was not an organism-organization; it was a solar system—a planetary system of self-moving elements governed by principle under common-to-all laws of attraction and motion.

This system-image had no head's force of will and authority moving it;

(continued on page 46)

From Boulevard to congested street

FRINK REVERSIBLE SNO-PLOWS clear the way—fast

Congested city streets call for quick action when snow strikes. FRINK Sno-Plows get in and clear the way fast. They're built ruggedly, for hard service . . . often are in nearly continuous duty during severe winter weather.

FRINK Reversible Sno-Plows with Trip Blades plow left or right or bulldoze straight ahead, end wasteful deadheading. Maneuverable for cleanup in areas of parked cars. Dependable for high-speed plowing in open stretches of boulevard. Several models available with hydraulic or manual reverse for trucks from 1½ tons up.

Send for full details on versatile FRINK Reversible Trip Blade Sno-Plows. Write for your fully illustrated catalog.

FRINK SNO-PLOWS, Inc.

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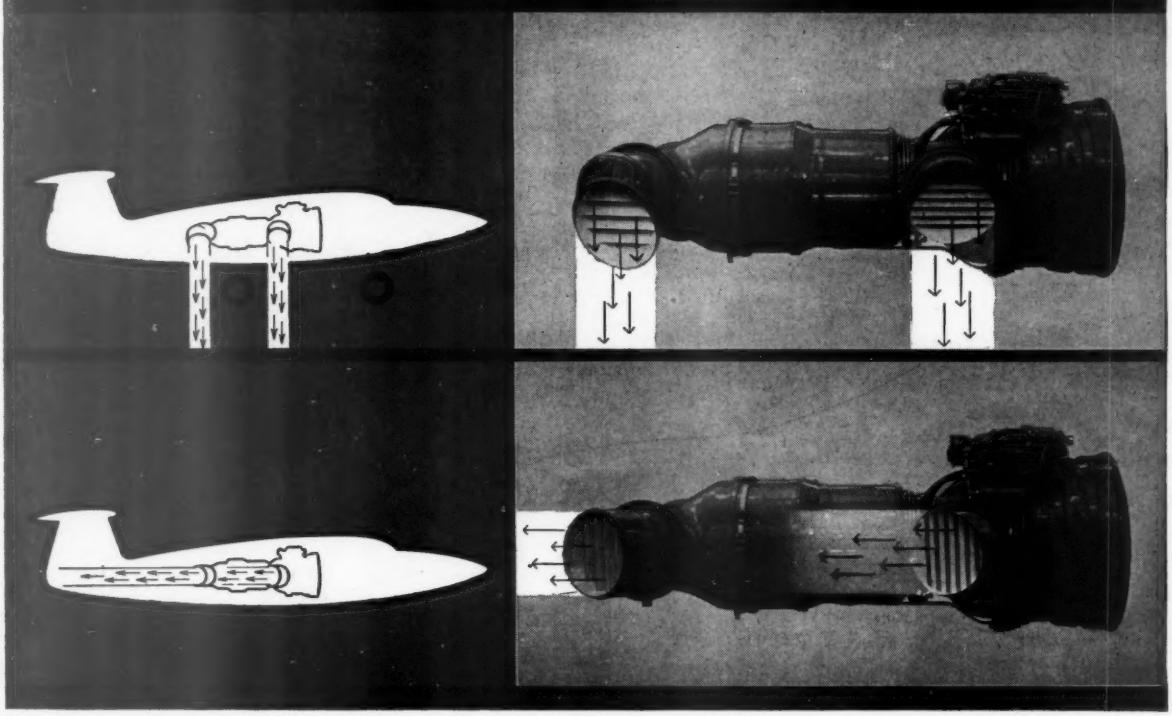
• V-Type • Roll-Over • One-Way • Reversible Trip • Leveling Wings

LIFT and THRUST from ONE ENGINE— the Revolutionary BS 53 Turbofan



...ANOTHER ENGINEERING ADVANCE BY BRISTOL SIDDELEY

The new Bristol Siddeley BS 53 high-ratio turbofan represents a major engineering breakthrough in the field of aircraft propulsion. Because the BS 53 can be fitted with movable nozzles evenly disposed around the centre of gravity which give directional control to its total thrust, this remarkably versatile engine provides the airframe designer with a *single power source for all conditions of flight.*

VTOL, STOL and normal take-off capability in the same aircraft. Suitable for subsonic or supersonic applications.

High cold-flow ratio gives high thrust for low weight, low fuel consumption and low noise level.

Conventional installation. Operational simplicity. Independent of all fixed ground installations.

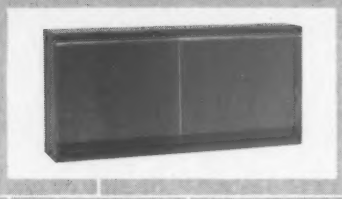
Problems of ground erosion, recirculation and ingestion of debris reduced to a minimum.

The Bristol Siddeley BS 53 has already been selected for the Hawker P 1127 VTOL light strike fighter and is supported by the Mutual Weapons Development Programme for NATO.

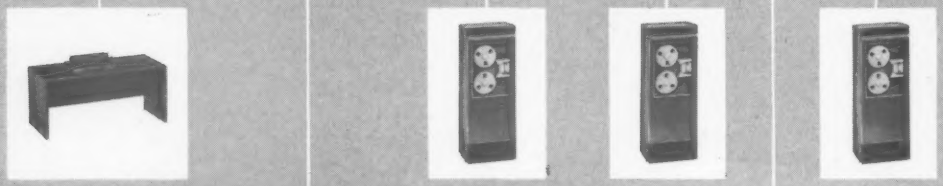
For further information please write to:- Bristol Aero-Industries Limited, 200 International Aviation Building, Montreal 3, Canada, Tel: University 6-5471.

BRISTOL SIDDELEY ENGINES LIMITED

BENDIX G-20

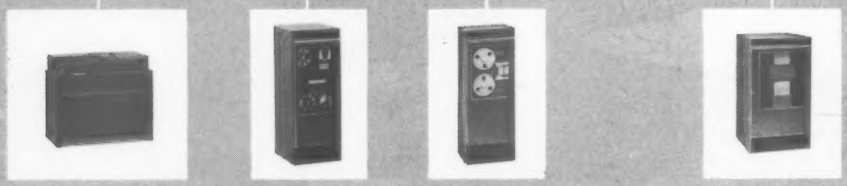


WITH ORGANIZATION CHART DESIGN



MEANS PRACTICAL EXPANDABILITY IN

BALANCE WITH APPLICATION GROWTH



Just as the organization chart of any enterprise provides the framework for dynamic growth and adaptation, so "organization chart" design provides the framework for unparalleled expandability in the Bendix G-20 data processing system. This means that your G-20 can economically match, step by step, your expanding scientific or business computational workloads ... without sacrificing system balance. • Key to the organization chart efficiency of the Bendix G-20 is the ability of the Central Processor to "delegate" routine data handling tasks to control buffers, acting as "line supervisors." Thus freed, the Central Processor can make most efficient use of its high computation speed, its ability to schedule program priorities and direct accessory equipment assignments. • The ability to employ many control buffers gives new meaning to expandability in the Bendix G-20. Up to 70 input/output units can be directed by each of these "line supervisors." The Bendix G-20 has a complete line of accessory equipment including keyboard, paper tape, punched cards, high speed line printers, and 2 million word magnetic tape units. • Memory represents another dimension of G-20 expandability, ranging from 4,096 to 32,768 words. • Investigate the organization chart design of the Bendix G-20. See how it provides balanced, *practical* expandability ... at a cost that assures unequalled data processing performance per dollar invested. • *For detailed literature write:*

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THE Bendix CORPORATION

Research Rundown

ARPA IS MOVING GRADUALLY AWAY FROM IDA (Institute of Defense Analyses) as a result of reluctance on IDA's part to work with industry people on industry product evaluations. Primarily a university group, IDA took over ARPA's work in the first place only because there was no one else around. A temporary arrangement to begin with, it is one that is finally phasing out.

NEW RESEARCH MANAGEMENT APPROACH has been developed by Institute of Defense Analyses, with an eye to better use of non-government scientists. Called Project Sunrise, the program includes about thirty university-type physicists who work part time on defense problems.

PROJECT SUNRISE, UNLIKE THE USUAL SYMPOSIA lasting two or three weeks, puts scientists concerned under contract for about six weeks a year, provides an element of continuity lacking in previous one-shot efforts. Akin to military reserve programs, Sunrise should serve to improve non-defense contributions to the defense effort.

BETTER BREAK FOR SMALL R&D CONTRACTORS will result from use of mechanized bidders' lists to be used by each of the three services. How the system will work: contractors with capability in a given area will be put in a punch-card system, will turn up on all invitations-to-bid which come along in their area.

ANOTHER ADVANTAGE FROM THE BIDDERS' LISTS will be allowing the small contractor to have some representation wherever the lists are used. Obviously, it's a little hard for a two-man electronics lab to have representatives at all of the places where all of the services buy such capability.

CARRYING THE BIDDERS' LIST IDEA A STEP FURTHER, there is the eventual possibility of inter-servicing the lists, getting the man on—for instance—Army's list a chance at Navy contracts he might be able to perform. This could, of course, also be expanded throughout the government, but best bet is that it will be quite some time.

GROWING EMPHASIS ON RELIABILITY in weapon systems is beginning to mark just about everybody's research and development work. With formation of a new office concerned only with reliability at DDRE level, there can be little doubt that this factor will continue to grow in importance. Best summation of the problem comes from ARDC's Gen. Schriever: "With the kind of systems we're dealing with today, if we don't get reliability we aren't getting anything at all."

CURRENT EFFORTS ON NUCLEAR POWER FOR SHIPS are centered in two major areas. First, Navy engineers are still striving for the breakeven point on an atomic carrier. Second, Navy is reportedly taking a close look at the feasibility of atomic powered destroyers.

DEVELOPMENT WORK ON NAVY'S EAGLE/MISSILEER will probably be handled in much the same way as was work on Subroc—a project-type management system. Initial work on the Missileer aircraft was handled by the old BuAer, while follow-on on Missileer and the entire Eagle missile program will be BuWeps' program.

CONTINUING PERSONNEL HEADACHE FOR R&D MANAGERS is created by industry piracy of scientists and engineers. By way of consolation, industry seems to face the same problem among themselves. Seriousness of this is, of course, underlined by the heavy technological load that the services must carry.

Research Rundown

Technical Data System Relies on Computers

Navy has announced development of a data processing communications system that evaluates enemy threats and recommends counter-moves to shipboard commanders in millionths of a second.

Called NTDS (Naval Tactical Data System), it centers around a computer-fed series of consoles that display enemy targets schematically, their type and movements, and defensive and offensive posture of friendly ships and aircraft.

Using the system, an entire Navy task force can be coordinated to the point of operating almost as one ship.

NTDS continuously collects information from the ship's radar, sonar and communications systems and simultaneously matches such information up with similar information drawn from other ships.

The system is scheduled for first shipboard installation early next year. The system can incorporate all anti-air warfare weapon systems now in use or under development by Navy.

Contractors involved in development of the system include: Remington Rand, computers; Hughes Ground System Group, aircraft data display; Collins Radio, communications; and Hazeltine Corp., display consoles.

Navy's Bureau of Ships was prime executor in system technical design, contract administration and hardware implementation, aided by Naval Electronics Laboratory on analysis, test, evaluation and design improvements.

Navy and Air Force Battle Noise Problem

Both Navy and Air Force are working hard to combat jet noise problems with their aircraft.

Navy is looking to a turbofan engine for its Missileer attack aircraft as offering some promise for limited relief from noise.

Dr. Richard Trumble, of the Office of Naval Research, said the turbofan engine, because of its lower temperature and low velocity fan air could muffle about 17 decibles of noise.

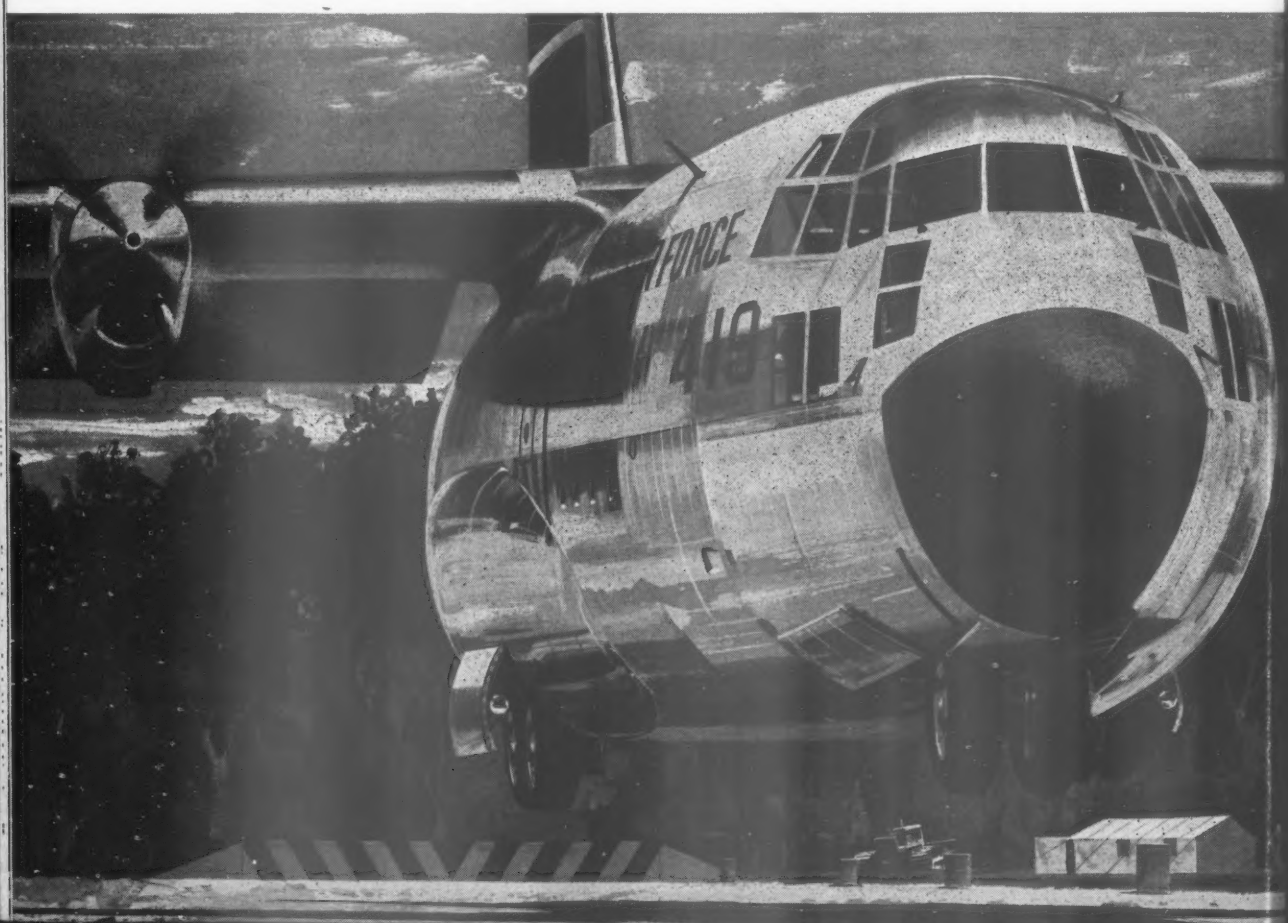
He cautioned however, that "minimum acceptable limit of 30 decibles of suppression at a penalty of no greater than 1% in performance (of Navy combat planes) does not appear to be in reach in the near future."

Also, an Air Force research expert has testified that cooperative demonstrations with National Aeronautics and Space Administration and industry show that airborne suppressors cannot lower significantly without introducing unacceptable reductions in aircraft performance.

Dr. H. O. Parrack, technical coordinator of the Air Force noise and vibration program, said Air Force will spend about $2-million in the next two years to explore areas including sound field of advanced propulsion systems, new mechanisms associated with nuclear propulsion and the effect of low frequency re-entry and blast-off sound fields and vibration.

In seven past fiscal years, Parrack said, Air Force has spent $15-million for applied research on aircraft and missile sound problems.

Navy has started development of "optimized portable ground suppressors." It has also awarded two other contracts to develop advanced type portable ground suppressors that acoustically treat noise generated from both the jet engine inlet and jet engine exhaust.



Underwater Alarm System Being Studied by Navy

Navy is continuing research on the problem of developing an underwater alarm system to warn the continental U.S. against approaching enemy submarines, according to Rear Admiral J. A. Jaap, Director of Development.

Whether such an anti-submarine alarm system would be a line of fixed detector posts, or designed in an area configuration to check on enemy movements is not yet clear.

Jaap called the need for such a system "urgent." He added that present state of our studies have disclosed no breakthroughs that would indicate an underwater system that compares with the Dewline radar.

Theoretically there are dozens of ways to do the warning job—but advancements in the principle of underwater echo-ranging and extensions of hydrophone concept still offer the most encouraging prospects, he said.

"Studies to date," he continued, "seemed to confirm that the North American continent, with its shallow water over gently-sloping continental shelves, plus the crescent configuration of our Atlantic coastline offer the U.S. some geographical advantages over the Soviets whether we consider a fixed or mobile warning system."

Jaap also said that "with the major investment and high priority we have assigned this program, we hope we'll be rewarded with some significant advance—the sooner the better."

Samos Satellite To be Stressed

The Samos satellite project will receive high priority under Brig. Gen. Robert E. Greer, in his new job as chief of all Air Force Ballistic Missile Division programs.

Samos is slated for $249.9-million in fiscal 1961—$50-million more than originally requested by the President. Greer will have almost complete authority to push Samos under BMD direction.

First launching of Samos is set for "early fall" and the satellite is expected to be operational sometime in 1963.

Samos will probably be sent in orbit by an Atlas-Agena combination. Its equipment will probably include photographic gear and a "ferret" sensor to get electromagnetic readings from the earth through cloud cover.

It may have "capsule recovery" capability. Prime contractor is Lockheed Missiles and Space Division, with Philco's Western Development Labs and Thompson Ramo Wooldridge as associate primes. Air Force is expected to orbit several Samos satellites when the system proves operational.

No Modification Needed For Minuteman Launch

Minuteman is the first U.S. intercontinental ballistic missile which will need no modification of either equipment or engineering concept before the first test vehicle is launched from Cape Canaveral, Air Force has said.

Thus, the solid-propelled missile will become operational in basically the same configuration as it was originally set up in the development program.

Following development engineering inspection at Boeing Airplane Co., Air Force asked the 500 contractors present to submit requests for alteration. None was received except in some minor cases.

The initial Minuteman test from Cape Canaveral will be the first case of an ICBM flight test which will have all operational equipment in use and programmed for full range flight.

The all-inertial guidance, operational and propulsion systems for all stages, anl re-entry vehicle will be tested in the flight.

BOUNDARY LAYER BREAKTHROUGH

50-ton BLC*-130 lands on 500-foot lightplane strips

At the turn-around point of a 2,000-mile round trip mission, Lockheed's new Boundary Layer Control C-130 will roll to a stop in 520 feet after touchdown. Takeoff is just as remarkable: lift-off in 500 feet—from an unprepared field. Stall speed: less than 50 knots.

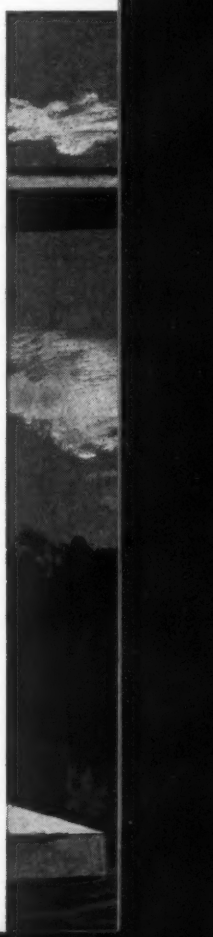
The BLC-130 is built on a proved and paid-for airframe design. It adds true STOL capability to the other C-130 superiorities established in more than three years of Air Force service: fast loading and unloading; rough-field takeoff and landing; performance of diverse airfreight/airdrop missions at low cost; and direct-to-trouble-spot airlift, such as the recent Congo airlift in which C-130s played the major role.

A test bed BLC-130 has completed flight tests, clearly demonstrating the feasibility of boundary layer control on large airplanes.

LOCKHEED

GEORGIA DIVISION • MARIETTA, GEORGIA

***BOUNDARY LAYER CONTROL**—High-speed air from pylon-mounted turbojet compressors is blown over flaps, ailerons, elevator, and rudder—causing airstream to hug the surfaces instead of being separated. The energization of surface air gives the BLC-130 its extraordinarily high lift.



Procurement Trends

BIG BOOST IN THE FY 1962 BUDGET IS UNLIKELY, according to one group of Pentagon money-men. The reasoning: too many other factors—such as an unfavorable balance of overseas payments—enter into the picture. Also, the entire national economy is heavily enough effected by Defense spending to be an extremely important factor.

ANOTHER REASON FOR NOT-MUCH-MORE MONEY NEXT YEAR is a Defense money situation in which what goes up almost invariably fails to go down. Since 1955, upward progress of the Defense budget has been a steady billion-a-year. Even with no increase over this normal change, 1970 shapes up to be in the $50-billion range. With—for instance—Rockefeller's $3-billion-a-year proposal, this figure leaps to $70-billion.

CONCERTED EFFORT TO SPEND MONEY SOONER is showing results in Navy's Bureau of Weapons. Under "planned procurement," the aim is to avoid the fiscal-year-end rush to obligate, provide smoother, more controlled spending spread evenly over the year.

THURMOND COMMITTEE'S REPORT ON PENTAGON PROCUREMENT has been greeted with few but kind words, is looked at as being notable for its objectivity. Comments one procurement officer, "For once they didn't come over here trying to slide a foundation under a pre-conceived notion."

THURMOND HAD NO AX TO GRIND IN HIS PROBE, and—perhaps more important—was not working with specific legislation in mind. As a result, the number one finding of the group was, in itself, somewhat unusual: "Most, if not all of the procurement problems in the Department of Defense can be solved administratively."

CONTRACT NEGOTIATION REVIEW PROGRAM initiated by Office of Naval Material is coming of age, after its fair share of foot-dragging at the start. The early complaints: the system would tie the negotiator's hands, only served as one more review on top of too many to begin with.

ACTUAL AIM OF THE NEGOTIATION REVIEW was, and still is, to provide cross-fertilization of ideas to negotiators, give them what one ONM Captain called "the best tools the Navy has at its disposal." As the system of review becomes more firmly rooted, one procurement officer points out, "most of the early fears turned out to be paper dragons. We think the system is going to do us a lot of good."

PENDING ACTION ON ELECTRIC/ELECTRONICS SINGLE MANAGEMENT is bringing about a full mobilization of the Air Force procurement-public relations forces. Still smarting from criticism by the Holifield Subcommittee for not having been more active in Single Management, AF is out to get the designation in this area.

AIR FORCE PITCH FOR THE SINGLE MANAGERSHIP runs basically this way: "If we've been slow to get started in Single Management, we have had our reasons. But these reasons no longer apply. Let's let by-gones be by-gones, because we're willing to move into this area with E/E."

CARRYING THE REASONING TO SPECIFICS, Air Force maintains they have carefully built a supply system to meet their own E/E needs over the years, can therefore best service whoever else needs service. Conversely, they feel that any other service picking up the assignment would have to spend a good deal of time building a comparable degree of responsiveness.

Now RCA Removes More of the Mystery From Data Processing!

First to provide new Plain-English Programming

Gone are the days of complicated "codes" that slowed up programming and increased costs in electronic data processing.

RCA's new COBOL Narrator utilizes universal plain-English language to express your business procedures. The Narrator then causes the computer, working from this statement of procedures, to generate *for itself* the volume of computer instructions required to do the job. The English language material prepared for the data processor is easily read and understood. As a result, direct management supervision of procedures and records now becomes practical and effective.

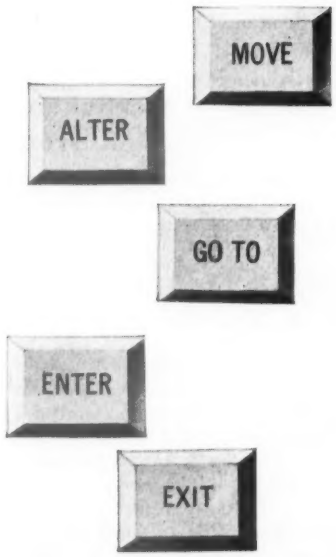
RCA

COBOL

COmmon Business-Oriented Language

COBOL

Narrator



COBOL is the result of cooperation by RCA and other manufacturers with large users in industry and government under the leadership of the Department of Defense, which created a simplified English programming language, common to all EDP users. It is one of the most important advances since the advent of automatic programming.

With RCA's COBOL Narrator, employees learn to program in days instead of weeks or months. Programming costs are substantially lowered since time required to get jobs ready for processing is drastically reduced; errors are fewer; changes, corrections, and reprogramming become easier and faster; program debugging on the English language level is quicker and more certain.

RCA's COBOL Narrator is now available for every RCA 501 System and will also be available for RCA 301 and RCA 601 Electronic Data Processing Systems. For further information write: RCA Electronic Data Processing Division, Camden 2, New Jersey.

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RADIO CORPORATION OF AMERICA

Two-Step Advertising Is Made Official

Two-step formal advertising procedures are now authorized throughout the Defense Department.

Under a recent change in Armed Services Procurement Regulations, the Air Force experimental technique is authorized for use by all services.

Basically, two-step advertising works this way: On a given project, the buying service asks for proposals from likely contractors, then evaluates and discusses these proposals with contractors before asking for a set price.

Aim of the technique is to insure technical competence of bidders, while at the same time maintaining price competition.

Defense also cites early development of specifications as a major objective of the technique. Such specifications would be descriptive enough so that subsequent procurement could be made by straight formal advertising.

Recent ASPR changes also include new guidelines covering research and development awards.

These R&D guidelines collect for the first time many guides previously scattered throughout the ASPR. They stress need for "highest competence" in this type of work, but add that awards should not be made for R&D capabilities that exceed those needed for successful performance of work.

Also emphasized is the caution that price or cost should be controlling factor in such contract awards.

There is no requirement, the new section says, that a cost reimbursable contract be awarded on the basis of either: (1) lowest proposed cost; (2) lowest proposed fee; (3) lowest total estimated cost plus fee.

"Award of cost-reimbursable type contracts primarily on basis of estimated costs may encourage submission of unrealistically low costs and increase the likelihood of cost overruns," the new section states.

The section also directs that the cooperation be used to develop information on technical competence of small business firms in the R&D field and that such information "regularly" be brought to the attention of contracting officials.

Information Campaign Started by OASD (S&L)

Office of the Assistant Secretary of Defense for Supply and Logistics has issued the first of a series of reports relating to various aspects of Defense Supply Management.

Aim of the reports is to create a better understanding of Defense Supply problems and management.

In initiating this series, ASD (S&L) said "Defense Department recognizes its responsibility to inform the American public and Members of the Congress of progress being made by the Defense Department in managing its business operations . . .

"The widespread current public and Congressional interest in this stewardship demands an understanding of the methods by which the Defense Department always strives for efficiency and economy in management of the taxpayer's dollar."

Army Announces Contract Aid Team

A special contract assistance team is now being organized by Army to provide information on bidding for maintenance of Army aircraft.

On maintenance contracts with Army aviation units within continental United States totalling more than $100,000, consultation of Army commanders with the assistance team will be mandatory.

In procurement involving less money than this, commanders can use the team optionally.

The regulation, setting up the consultating unit dated 4 August 1960, says its mission will be to furnish specialized technical and professional help to buying activities in continental armies in negotiation and award of aircraft maintenance agreements, to assure uniform standards and techniques.

Economics Course Set By Industrial College

Industrial College of the Armed Forces is offering Economics of National Security, a graduate-level course available at no cost to qualified military and civilian personnel.

To be handled on correspondence basis, the course is an outgrowth of the 10 month resident course conducted by the College at Fort McNair, Washington, D.C. The course consists of 22 bound volumes organized into five integrated units of study: (1) Background Information; (2) Resources and Facilities; (3) Processes in the Economics of National Security; (4) Foreign Aspects of National Security; and (5) the Problems of National Security. Course duration is about a year.

For further information write to Commandant, Industrial College of the Armed Forces, Washington 25, D.C. Attention: Correspondence Course Division.

European Starfighter Has Production Trouble

Both headaches and progress are the lot of European production programs on the Lockheed F-104G Starfighter.

On the one hand, Italy has selected the F-104G Starfighter as standard for the Italian Air Force and appropriated about $80-million for procurement.

Meantime, in Germany, the F-104 program is causing some concern. German aircraft industry says many alterations have been announced but not specified. This will mean higher costs than originally forecast.

During earlier negotiations, the German Defense Ministry has agreed to build a series of 50 Starfighters on a cost-plus basis. Reason for the changed government attitude is fear that the plane may cost considerably more due to alterations, and approved by the German legislature.

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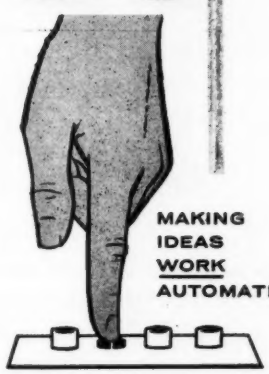

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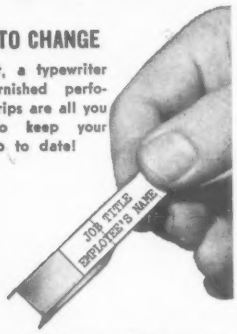

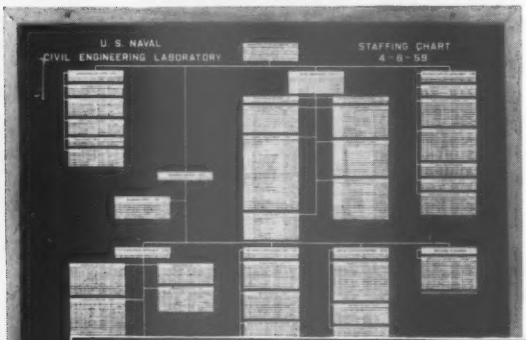

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Postulate . . .

(from page 36

it had no head to cast his shadow and no hierarchy. Reason established a new image in the common sense—the planetary system with its newly revealed principles of natural dynamical system-organization. The basis for the old "lengthened shadow" postulate was proven false; the postulate was no longer valid.

This third analogical model—the planetary system—is *emulated* by reasoning from its principles, not *imitated* by direct analogy.

The Marked Emulations

First marked emulation started with the 1776 American declaration of principles for deriving the rational organization for a new nation by "organizing its powers," not its persons. Each man in this new organization would cast his own shadow (be self-governing) in free enterprise; but he had no right to govern others (extend his shadow over them). The 1789 Constitution provided the contract; it joined men in collective human effort.

The second marked emulation started in 1839 (baseball) with the rational design of organizations for athletic teams in collective physical effort.

The third marked emulation started in 1945 with *Atorgenics*, the structural branch of Organizational Science. Atorgenics extends rational design to the organization for collective human effort—mental and physical, for any purpose—business, government, military.

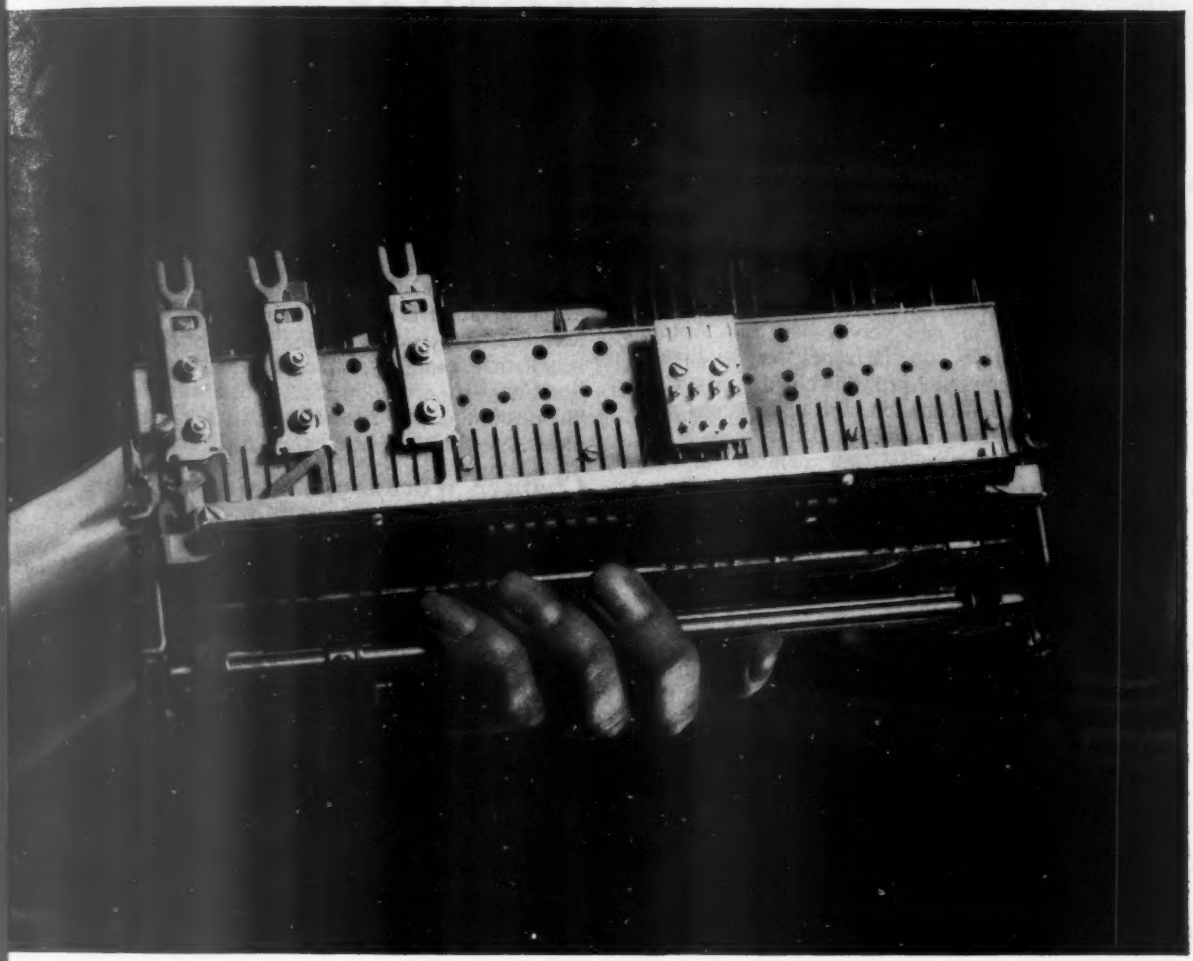
The Purpose-Contract

A collective's purpose-contract, as a parent, lengthens its shadow by generating lines of progeny-contracts in a system of logical relations so that all needed individual purpose-contracts are formed; they call on every person individually to cast his unique shadow—they include all contributions—leader, executive, administrative, professional, scientific, technical, clerical, artisan—common skill . . .

But marks of the long-vanished medieval image persist. We still hear the "lengthened shadow" postulate. People still say "the sun rises" as they did when they believed they and earth were the center of the world.

The since - 18th - century - invalid "lengthened shadow" postulate readily made valid: delete "one man" and in its place insert "its purpose."

Author Kuhre can be contacted at P. O. Box 5274, San Antonio, Texas.



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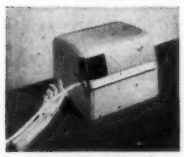

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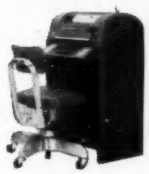

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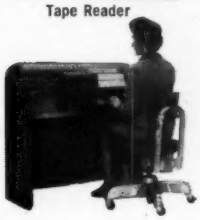

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Case History

One of the finest examples of what can be accomplished in the matter of building a chapter—membership, growth, program and service—is San Antonio Chapter #17. Literally "on the ropes" at the time of our national conference in April, this chapter caught the spirit generated by that occasion, and under "new management", is experiencing phenomenal things.

For example, from only thirteen members in May, San Antonio's membership count now stands at close to 50, and the missile is not yet in orbit! The group has won the interest, confidence and support of its commanding officer, CG Fourth U.S. Army, *the first requisite of a successful chapter operation.*

Concurrently, the chapter has developed a program of outstanding guest speakers for the year, which is pulling in 80 to 100 attendance at each meeting. Further, they have interested CG Air Training Command in their operation, which is expected to enhance Air Force participation.

A close liaison with industry—another requisite of successful chapter operation—is SOP with the San Antonio group, and industry members are closely integrated into the chapter.

Spirit of the chapter is best summed up in a recent letter report to national headquarters in which the chapter president, James H. Leverenz stated, "We plan to make our chapter, if not the largest, at least the most well-known and production chapter in our organization."

More power to Jim Leverenz and his spirited Texans! Here is a worthy challenge for every field group in AFMA.

AFMA Journal

At about the time this is received, the 1960-'61 edition of the *AFMA Journal* will be off the press. We consider this our best effort to date, and its technical excellence is a worthy partner of our fine reporting ARMED FORCES MANAGEMENT magazine.

Both, as you know, are included in your membership dues for the year. Frankly, we don't know how we do it, and to the best of our knowledge, we are the only national organization in the country that offers such a bargain to its membership. Why not take full advantage of this selling point, you chapter presidents and membership chairmen? It's hard to beat!

As was the case last year, this year's edition is devoted exclusively to the proceedings of our National Conference held last April in Atlanta under the sponsorship of the Commanding General Third U.S. Army, and the prize winning Atlanta Chapter located at Army HQ at Fort McPherson.

As those in attendance will inform you, this conference was blessed with some of the most valuable and stimulating presentations ever given before a meeting of this nature by leaders in defense, industry, education and government. Not only is the edition highly interesting reading but it is a valuable reference work as well. Members and friends of the Association can do their installation, company, or school a big service by inviting librarians to write in for subscription information. Queries should be directed to Armed Forces Management Association, Washington 25, D.C.

Chapter Workshops Report

An added, unique feature of the *Journal* this year is a full report by five workshop groups at the national conference which studied ways and means to improve all aspects of chapter operations.

This report represents the best thinking of all of the many chapter representatives in attendance, who, for the first time in our history, had the opportunity to "get into the act" and speak their pieces. The efforts of this group, chaired by Lt. Col. Earl Cole, President of the Fort Benning Chapter, resulted in a compendium of useful information which will be of great value to every chapter, as well as to the many groups in the process of forming chapters. A "Well Done," to the many contributors to this AFMA milestone!

Chapter Briefs

A superb example of just how valuable and useful a livewire AFMA chapter can be was demonstrated recently by *Great Lakes-Chicago Chapter No. 32.*

Asked to take part in the First Chicago Regional Strategy Seminar, they were one of a number of co-sponsors assisting in this important event held 23-24 September in the Prudential Building.

Focusing particular emphasis on the non-military aspects of current Communist strategy—Economics, politics, propaganda and psychology—the seminar included a wealth of our country's top notch speakers on its stimulation agenda.

Aberdeen Proving Ground Chapter No. 12, at a recent dinner meeting, elected the following officers for the coming year: President, Col. Eli E. White, OTC, Vice-President, William S. Stevens, Plans Office, APG; Secretary-Treasurer, Lydia Price, Comptroller Office. Guest speaker was Col. G. F. Powell, Deputy Commander, APG.

Far East Chapter No. 27 recently elected officers for the coming year as follows: President, Lt. Col. Robert H. West; Vice President, Robert R. Shirley; Secretary, Selig Alterman; Treasurer, Capt. Ralph R. Murray. Addressing the meeting was Dr. Kazutaka Watanabe, well known Japanese social philosopher.

Next National Conference: Shoreham Hotel, Washington, 28 February-2 March. Plan to attend.

AMERICA'S INVESTORS OF TOMORROW

Not long ago two middle-income investors got to talking about the exciting increase of shareowners across America. The more they talked the more they wondered whether the number of investors hasn't approached a saturation point.

Well, it hasn't—far from it.

If anyone considers the current total of 12.5 million individual shareowners an ultimate of any sort, the Stock Exchange's second survey of public attitudes, offers lively proof to the contrary. Out of the pages of the study emerges a picture of prospective investors who number somewhere between almost 13-million and 35-million strong.

Some 12.8-million adults are now "on the threshold of investing," for example, according to the study. Specifically, these men and women said they had either considered investing during the past year or else they would invest extra capital in common stocks instead of other types of investments.

The Encouraging Attitudes

That figure by itself is sufficiently large to suggest an American shareowner family of 25 million sometime in the future, but the potential is actually much greater. An additional 22.5-million Americans expressed an "interest" in investing. What they want to learn more about is the Monthly Investment Plan, Stock Gifts to Minors, Investment Clubs, Employee Stock Plans or other investing techniques.

The Stock Exchange's latest study offers an encouraging outline of public attitudes towards shareownership in the five years since the previous study.

Among a host of other findings, the number of Americans able to explain the role of the Stock Exchange itself has increased by nearly twenty per cent to 28-million.

Perhaps even more important, additional millions now realize that large sums of money are not necessary before participating in the investment process. In the latest study, no less than 38-million adults, an increase of almost 19 per cent over the number with such a viewpoint in 1954, said that a broker would be interested in an account started with less than $500.

Forty-three per cent of the total adult population of 104-million believe there should be more shareowners than there are today. Only a relative handful of people—four per cent—say there should be fewer shareowners, while the remainder apparently hold no strong opinions one way or another.

"Better Informed Investors . . ."

Yet impressive as these other findings are, much still remains to be done, particularly in the realm of investment information. Although there has been a sharp increase in public awareness of the functions and standards of the Stock Exchange, vast segments of the public are still unfamiliar with the investment process—and only one adult in four can adequately define common stock.

However, 36 million adults do want more information about investing. Most effective means of providing this information, according to the survey, are pamphlets and booklets, newspapers and television programs.

"There are some of the findings which constitute an enormous challenge to the Exchange community if, in the years ahead, the securities industry is to attract a growing number of investors," President G. Keith Funston of the Stock Exchange commented. "Our goal is clear; Not merely *more* investors but *better informed* investors as well."

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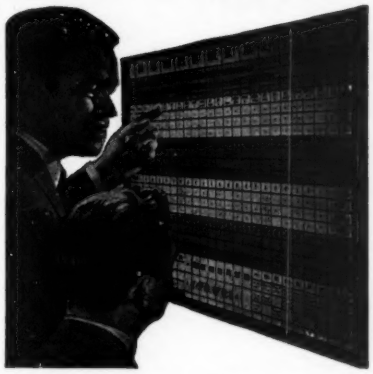

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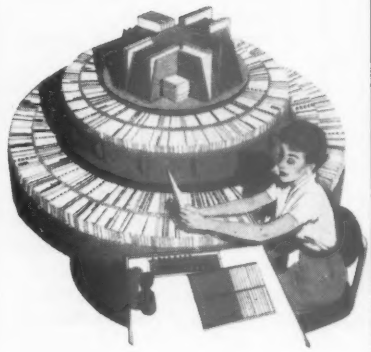

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